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THIRTEENTH ANNUAL REPORT
OF THE
PROVINCIAL BOARD OF HEALTH
OF ONTARIO

1894

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THIRTEENTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH

OF ONTARIO

BEING FOR THE YEAR

1894.

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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1895.

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OF THE

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THIRTEENTH ANNUAL REPORT

OF THE

PROVINCIAL BOARD OF HEALTH.

To the Honorable GEORGE AIREY KIRKPATRICK, *Lieutenant-Governor of the Province of Ontario.*

MAY IT PLEASE YOUR HONOR:

It is, in this year as in that which is past, a source of thankfulness that during its course Ontario has not to any great extent suffered from disease.

With the knowledge now existing of the mode in which infectious diseases spread, together with the power possessed of preventing the extension of them to a great degree, and in consideration of the care expected to be taken by the health officials both in Canada and the United States to watch the course of such diseases, we should expect that it would be possible for us to say that none has prevailed in our Province. But it will be seen from the reports of the Committee of Epidemics of this Board that there has been one exception to the general watchfulness against invasion of this sort, on the part of our neighbours, and that from the quarter alluded to smallpox has found its way into Ontario, appearing in several localities in the west of the Province. Thirty-six cases of the disease having appeared among which five deaths occurred.

In connection with the subject of smallpox, it seems right again to notice that of vaccination, and to observe that this easy mode of escape from the horrors of smallpox might well become the subject of a very stringent legislation, by which means would be adopted to enforce the vaccination of every child at the age of three months at latest. It may not be out of place here to mention that among the intelligent population of Scotland, there was, and perhaps still is, an understanding, not expressed but understood and acted upon, that the duty of the obstetrician was not completely performed until he had successfully vaccinated the infant. The sensible people preferred what they saw to be the consequence of vaccination to what their old people had told them of their experience of smallpox.

The Province has also suffered somewhat from diphtheria, especially in the poorer and unorganized districts. Differently from smallpox, this disease requires no introduction to us. It is always with us; but with due carefulness on the part of the communities which suffer, its prevalence and intensity may be much diminished. Having regard to its great fatality among children, it is disappointing to see so little precaution against its contagion on the part of parents and guardians. Typhoid fever appears not to have attained prevalence in the Province during the year; and Asiatic cholera seems to have been controlled in the beginning of its course, so that it has not been heard of beyond the borders of those countries in which it is endemic.

The Board has had under its consideration the desirableness of "homes for consumptives." In such institutions, those affected with phthisis might employ themselves usefully, and at the same time be more successfully treated by the physician than in their own houses; while their removal from their own families would save these from the almost sure infection of other members of it. So sure is this to follow, in perhaps the majority of instances, that the disease has come to be thought to be due to a family taint; whereas it is always the result of infection. If the member of a family showing signs of phthisis was immediately separated in a "home" the lives of many of the rest might be saved from a fate under which we often see a whole household disappear.

It is hoped that the public mind will, in time, become accustomed to the idea of the separation in the "home," as preferable to that final separation which is otherwise the rule in phthisis. But in the meantime, the people at large and the medical profession require to be educated concerning "Homes for Consumptives."

I have the honor to be,
Your obedient servant,

J. D. MACDONALD,
Chairman.

PART I.

PART I.

CHAPTER I.

REPORT OF THE SECRETARY.

The year 1894 must be classed amongst the healthy years of the last decade of the public health in Ontario.

Fortunately, as was stated in the report of 1893, the cloud of cholera passed harmlessly over this continent, and so far as Ontario is concerned the general dread of the spread of smallpox from neighboring American cities was not in any great degree realized. Fortunately *la grippe* found few victims as compared with the previous year, and as will be seen in the annual report of the municipalities in Part III. there was no great incidence of typhoid fever, in spite of the long period of excessive drought in July and August.

While diphtheria prevailed during the autumn in many places, yet even in the case of this disease it will be found, if the cities are to be an index to the country as a whole, that no increase or marked prevalence of the disease appears to have been present.

Scarlatina, judging from the reports received by the Provincial Board, has shown a general tendency to spread, but the total mortality from this disease has as before been noted, been declining in Ontario during recent years.

It seems therefore very evident that so far as regards contagious diseases, as generally classed, their presence and general dissemination are subject to laws in large degree understood, and governed by the direct influence of individual care and the degree to which the general intelligence of the community may be exercised either in resisting them or lessening their prevalence.

The fact, however, of the year being largely exempt from an epidemic of smallpox does not lessen the utility of referring to smallpox outbreaks and the dangers therefrom to be avoided.

As will be seen by reference to the reports of the Committee on Epidemics of this board, the epidemic of the disease which existed with great virulence in Chicago during the first half of 1894 was viewed with much alarm, owing to the constant commerce and traffic between that city and Ontario. Hence the board issued as early as January 11th a circular to local boards of health, referring to past outbreaks, to the neglect since 1885 of general vaccination in many municipalities, and to the necessity of putting into force the provisions of the Vaccination Act regarding the vaccination of school children and all under that age. The epidemic in Chicago having greatly increased in extent, the board issued a further circular on May 10th containing the following resolutions:

> 1st. That the Provincial Board of Health, having considered the report of the Committee on Epidemics. in which the prevalence of smallpox in the neighboring States of the Union is set forth, is of the opinion that in order to provide for the adequate protection of the people of Ontario against this disease, local boards of health should, under the Vaccination Act, still more actively than heretofore prosecute the work of vaccination and re-vaccination within their

several jurisdictions by providing stations for systematic public vaccination and by keeping fresh vaccine always on hand for the convenience of practising physicians.

2nd. That in order to have the work of vaccination systematically performed, the board is further of the opinion that medical health officers should supply each physician within their municipality with blank certificates, which will be returned containing the names of all persons successfully vaccinated by them.

3rd. That depending upon the active co-operation of local medical health officers, at the various points on the border, with the collectors of customs, who under the quarantine regulations have been notified to act as quarantine inspectors, the Provincial Board of Health does not deem it in the meantime necessary to add further to the defences of such borders against smallpox, but trusts to the alertness of physicians and medical health officers to detect and promptly isolate any first cases of smallpox that may at any time make their appearance.

The epidemic in the west, which had been largely limited to Chicago, assumed for Ontario shortly after the issue of the circular a more serious phase, as by June 23rd there were outbreaks reported from fifteen places in Michigan, with a total of 55 cases. Its rapid spread naturally caused great alarm in the municipalities along the Detroit river, and an emergency council of war was called for June 28th at Windsor, of the health officers and boards of the three border counties, which was promptly responded to. In the circular issued on June 29th, immediately after this meeting, the following statements appeared:

It will be observed from the table that we have been singularly free in Ontario, and that explanation of the fact must be very largely found in the epidemic in Chicago being principally among the poorer classes who did not travel much. With the advent, however, of warm weather and the opening of navigation and migration of tramps, it will be seen from dates given that a decided and rapid increase in centres of smallpox has occurred especially in Michigan within the past month.

From this information from correspondents and from representatives of local boards present at Windsor it appears that of 22 municipalities in Essex action has been taken *re* vaccination in 14; of 17 in Kent 4 have taken action; while of 21 in Lambton only 1 is reported to have taken action.

It is therefore apparent that, while there may have been local neglect in replying to circulars of enquiry in some cases where boards have taken action, yet the immediate presence of danger would seem necessary before local boards will take prompt action in this matter. The result of such delay is seen to-day in the position of Detroit, which, warned by the presence of smallpox in Chicago during six months, was found at the moment of the first case appearing to have had no hospital, tent, house or boat wherein to isolate the sick; and presents at the end of thirty days the effects of delay in having 29 cases of the disease and 21 centres of infection, and requiring the services of 42 police to keep the suspects isolated.

The Provincial Board, therefore, would again indicate to local boards their plain duties in the matter of preparing for the advent of smallpox, and desires to state that it will endeavor to promptly give effect to the wishes of the twenty boards represented at Windsor, as expressed in the following resolution:

"Moved by Dr. Lougheed, seconded by Dr. Reaume, that in the opinion of this meeting of health officers now assembled at Windsor, it is very necessary, in view of the alarming rise of smallpox in the neighboring state, that the immediate necessity for general vaccination be impressed upon all local boards of health, in order that an outbreak of said disease may be averted. And that in all municipalities along the border where a local health officer is not now appointed the Provincial Board be requested to make such appointments at once."

Local boards of health are therefore requested and expected to reply promptly to this circular stating what action they have taken in compliance with the terms of the above resolution.

I have the honor to be your obedient servant,

P. H. Bryce,

Secretary.

That the true direction of the real danger was set forth in the circular just quoted from, was seen in the history of the several outbreaks which subsequently occurred, the source of which is set forth in the following table:

Municipality.	Date.	Cases.	Deaths.	Source.	No. of introductions.
Essex county—					
Colchester township	June 14	1	....	Chicago	1
Windsor	July 24	1	....	Detroit	1
Windsor	Oct. 10	1	....	Detroit	1
Sandwich E	Aug. 10	1	....	Detroit	1
Sandwich E	Sept. 30	7	2	Detroit	1
Elgin county—					
St. Thomas	Dec. 9.	1	1	Detroit	1
Frontenac county—					
Kingston	May 18	1	....	Barge from Chicago	1
Kent county—					
Chatham township	July 24	1	....	Detroit	1
Dover township	July 20	1	....	Michigan	1
Raleigh township	Nov. 30	1	....	Detroit	1
Middlesex county—					
Strathroy	Nov. 20	7	2	Detroit	1
Lobo township	Dec. 12	1	....	Detroit	1
Oxford county—					
Oxford township E	March 4	3	....	Chicago	1
Perth county—					
Logan township	Nov. 20	3	....	Chicago	1
Wentworth county—					
Hamilton	June 3	3	....	English emigrant	1
Hamilton	June 20	1	....	Unknown	1
York county—					
Toronto	Dec. 10	2	....	Chicago, through exposure at station to Logan case	1
Total for 1894		36	5		15

The causes which led up to a condition of affairs in Detroit, by which its board of health became a by-word and reproach amongst sanitarians, need not be referred to here; but the results may fairly be held to illustrate the opinion, 'that politics and health interests make an ill-matched pair,' and that the latter is, in the race, most likely to fall to the rear. That the disease, with so many separate outbreaks, was so completely prevented from spreading, may we think, be fairly attributed to the close relationship and confidence which exists between the central executive and the many efficient local boards of health throughout the Province.

Much has recently been said and written both with regard to the necessity for general vaccination as generally understood and practised in most European countries, and of the absence or presence of dangers attaching thereto As regards preservation the methods adopted have been and are crude in comparison with those which are in daily practice in other branches of bacteriological science. This is equally true of the methods of inoculation seen too commonly in use with practising physicians; and this latter reference may perhaps be not uncalled for regarding the duty which lies upon practitioners in the use of anti-toxin for other diseases, such as diphtheria. I have deemed it proper to make this reference to vaccination in virtue of the strong position boards of health and health officers are placed in by law regarding the operation. The public have a right to demand that the compulsory protection against smallpox by vaccination be made as safe as the most advanced science makes possible; and boards of health and physicians have equally the right to demand that sufficient grants of money be made and such fees paid as to make care in the preparation of vaccine the greatest possible, and the dangers, if any, resulting from the operation to practically disappear. While the results of the European methods have been the saving of innumerable lives in every populous country where practised, we think it must be fairly assented to that there have been enough of unfortunate results in their totality from the practice of the operation as generally performed, to demand for vaccination, whether in the preparation of the serum or lymph and in the method of its injection, that it be placed on the same plane and in the same category as the now well accepted methods which govern all other forms of serum-therapy.

While the Ontario Vaccine Farm has, I believe, maintained its reputation for supplying an active lymph during the past year, yet there have been too many complaints of excessive activity of the lymph, not to make it necessary to draw the conclusion that both in the standardizing of vaccine lymph and in its subsequent aseptic preservation and inoculation, improvements are both possible and practicable.

These remarks very naturally lead up to the question which during the past year has assumed a new importance, and a new phase, viz., that of the Provincial Board of Health being supplied with a grant wherewith to establish an institution not only for experimental work, but also for manufacturing and supplying to medical officers of health and to physicians, those antitoxic serums which have come so greatly into prominence during the two or three past years. During the past nine months representations have been made to members of the Government and to members of the Provincial Board of Health, with regard to the great advantage the placing of such products directly under governmental supervision would be both to the public and to the medical profession. The Provincial Board has naturally been slow both to accept the reports of the great value attributed to the new discoveries and still slower to accept any responsibility with regard to their manufacture and distribution. The primary question, however, for consideration is to what extent is there any necessity for adding such an institution to the work of the Board. In the remarks already made regarding vaccination it seems very clear that in the very nature of things the present method of its manufacture and supervision cannot be said to be upon a basis satisfactory either to medical health officers and physicians or to this board. Had the amount of vaccine sent out last year been supplied by a government institution the amount of the receipts would have been such as to notably aid in its maintenance, should its distribution to municipalities and physicians be determined upon in such a manner as to pay for the outlay. Next in practical importance is undoubtedly the preparation of diphtheria antitoxin. This work has been undertaken in earnest now by a number of governments. The Imperial Government of Germany in view of the high cost, the skill and care required in its preparation and the dangers which might result from improperly prepared material, has taken its manufacture and distribution under its control. A government officer has been placed in charge of the work at Farbwerke at Hoechst as well as in the laboratory at Berlin. Each dose of serum prepared for sale is inspected and sealed.

From the beginning the work of preparation and experimentation with antitoxin in Paris has gone on in the Pasteur Institute and directly under the supervision and control of Dr. Roux. There, as in Germany, certain licensed apothecaries only are supplied with and allowed to sell antitoxin. It is supplied gratuitously to hospitals and dispensaries. Subscriptions to the extent of £30,000 have been placed in the hands of the Pasteur Institute, so that the ability to supply the serum at the normal price of $1.25 per dose has been made possible. Depots for distribution throughout the provinces have been established.

In the several other countries of Northern Europe its manufacture has been similarly begun, although it has not yet been placed under government supervision. In England the work of its manufacture, and to some extent, of its distribution for experimentation has been undertaken in the laboratories of the Royal Colleges of Physicians and Surgeons.

The Marine Hospital Service of the United States has undertaken its preparation in the laboratory at Washington, and is supplying tested samples for the use of the various stations of the service, and to the Washington authorities and physicians. The City Board of Health of New York passed a vote of $30,000 in 1894 for the establishment of stables and a laboratory for the preparation of antitoxin, and by the month of May, 1895, had announced that the antitoxin would be supplied free of cost on application at the Board's office, and on presenting the attending physician's certificate of inability to pay for it.

The City of Boston, working in conjunction with the biological department of Harvard University began in November, 1894, preparations for the production of diphtheria antitoxin, and its distribution is in the hands of the Boston city council, while the Massachusetts State Board of Health has just recently undertaken the manufacture of antitoxin for state distribution.

In all the instances given, we find that it is in centres where scientific investigation is most advanced, and where vaccine lymph has been produced and kept under careful control, that laboratories for manufacture are being established.

In addition, however, to these two divisions of practical work, the preparation and maintenance on hand of tuberculin for testing cattle for tuberculosis, is a matter which in the rapid evolution of bacteriological science is, in my opinion, being pushed into the back-ground so far as its practical aspects are concerned. In Massachusetts recently, and three years ago in New York, cattle commissions had begun the work of inspection; but only in 1894 had any systematic attempt to diagnose tuberculosis by tuberculin been begun. Remembering the results of the experiments carried on by the Provincial Board, and the even more recent statistics of Professor Bang of Denmark, that of 207 cases which showed the tuberculin reaction 96 per cent. proved tuberculous, it is apparent that this board must press forward without intermission the work of insisting upon the inspection of cattle, should it fulfil its mission in this matter of so momentous importance.

But besides these diseases, this year records the second case of hydrophobia in the Province which has demanded prompt, scientific treatment to anticipate the development of the rabietic poison, and a second time has the prompt action of the board and local authorities resulted in the saving of life.

Such with many other problems of equal import are pressing upon this board the question of how and in what manner it can best meet the public demands being made upon it by disease and human suffering and by the scientific means which daily are being discovered for their prevention and amelioration. Clearly the work is both beyond the scope and power of ordinary medical practice and skill, and the financial means at the disposal of these or of the medical *Faculties* in Ontario. The board has in the past kept fair pace with modern scientific achievements, but to do more work additional assistance in the shape of financial aid and expert workers is demanded, if we are long to keep in the running. Naturally the board looks to the public, who are benefited by its labors, for sympathetic approval, and to the prominent members of the medical profession for pushing the claims of this expanding work. Recognizing the achievements of the board in the past, we may fairly say that "*ne quid nimis*" has ever been its motto, and that each year has shown how the mustard seed has grown and is spreading its protecting branches over many a patch of arid soil. The board's closest allies are the scientific physicians who, going out yearly to enter upon their professional work, soon find that the *ars medicinæ* must take a secondary place even in practice to those truths and discoveries, the long result of time, which the votaries of the exact sciences have obtained, as the button of gold which separates itself by its very weight and worth from the dross of the chemist's crucible.

Naturally the Provincial Board of Health wishes their assistance in the localities blessed by the presence of any progressive medical practitioner, and promises that in aiding to build up county or district societies of advanced workers, they shall have the ungrudging and best assistance which the board with the limited means at its command can afford.

CHAPTER II.

TOXINS AND ANTI-TOXINS.*

In order that this subject may be understood in all its bearings, it will be necessary to preface the remarks proper with a short historical review of our knowledge of bacterial poisons.

Hegel has said somewhere that progress always traverses three stages, the second stage is the negation of the first, the third approaches the first in form, but is really only a reconciliation of the conflicting ideas of the first and second. This is nowhere better borne out than in the history of infectious disease, and I wish briefly to outline to you what these three stages have been.

In the older medicine, putrefaction was supposed to play a very important etiological role in the causation of disease. It did so, either on account of the emanations from putrid material producing fevers such as malaria and typhoid, or the spontaneous putrefaction of the tissues of the body giving rise to disease such as blood-poisoning.

It is to this idea of so called putrid infection or putrid poisoning that we must look for the first beginnings of the study, not only of bacteria, but of their toxins also.

Although accepted for many centuries by medical science, putrid infection was not studied experimentally until the middle of the last century. In 1758, Seybert tried the experiment of inoculating dogs with weighed quantities of putrefying blood and flesh. He found that if certain doses were used, the animals always died with definite symptoms of poisoning.

From the time of Seybert until the middle of the present century these experiments were repeated or modified without reaching any definite conclusions as to the nature of the poison. At the same time there arose two distinct theories as to the cause of putrid infection, one was that chemical compounds alone were responsible, the other that the minute bacteria which were beginning to be observed in all putrefying material were the cause. This latter theory was called the vitalistic theory.

In 1856, however, the chemical side of the question received a great impetus from the work of a Danish physiologist named Panum who published the results of an elaborate series of experiments upon putrid intoxication. In these he separated the bacteria from the putrefying matter by means of filtration and then by chemical methods, isolated in an impure state, several substances which were exceedingly poisonous and which gave rise to all the symptoms of putrid poisoning. He concluded from his experiments that these chemical compounds were responsible for this intoxication, but curiously enough he let fall the suggestion that perhaps the bacteria were responsible for the formation of the poisons. Had this suggestion been heeded and followed up, possibly the advance of the science of bacteriology would have been more rapid. But when Panum's work became known to the scientific world by the publication of a German abstract in 1859, the chemical side of the work excited such interest that he was followed up by a host of chemists who had not his careful physiological training, and who might be considered partizans of the chemical side of the question. A great deal of work was done, but the crowning point was the separation in 1868 by Schmiedeberg and Bergmann, of a crystallized chemical compound, called by them sepsine. By the discovery of sepsine, it was thought that the whole mystery of infectious disease was solved. It was to be held responsible for every form of putrid poisoning or infection, and all sorts of airy theories as to disease were built upon the supposed presence of sepsine.

---

* By J. J. Mackenzie, B. A., read before the Canadian Institute, February, 1895.

But whilst the chemical school was apparently triumphing, the vitalists were adding fact upon fact. The labors of Davaine in proving that the anthrax disease in cattle was due to a micro-organism, and the work of Pasteur in the controversy upon spontaneous generation, strengthened very much the vitalistic idea. The vitalists were, however, not less narrow in their views than the chemists. They considered that the presence of bacteria in the body was quite sufficient to account for all symptoms of disease without the intervention of chemical substances. As long as we had to do with disease, such as anthrax and blood poisoning, in which the whole body was invaded by the germ, it was quite possible to accept the purely vitalistic explanation, but in 1884 Löffler discovered the bacillus of diphtheria, and he was compelled to suggest that the symptoms of intoxication, *i.e.*, the symptoms of the disease must be due to a chemical substance secreted by the bacillus. The bacillus in diphtheria is strictly confined to the diseased mucous membrane, while the symptoms of poisoning are general, and destruction of nerve tissue may occur all over the body. This discovery of Löffler's forced the third phase of the question upon the scientific world, *i.e.*, the reconciliation of the chemical with the vitalistic ideas.

From that time forward every new discovery in bacteriology rendered more necessary the assumption that the cause of a specific infectious disease was a specific microbe, yet that the symptoms of that disease were due to the poisons elaborated by the microbe. It is then with the toxins or poisons produced by bacteria that the first part of my paper has to do this evening. For a time notably on account of the work of Selmi, Gautier, Brieger and others, it was thought, that these poisons were comparatively simple in character. These observers isolated from putrefying material and from bacterial cultures compounds very like the alkaloids of plants. To these they gave the name ptomaine; some of the ptomaines were poisonous, some were not, but they were found in quantities in all putrid material. Unfortunately, however, they were not nearly as toxic as the putrid material from which they were derived, they were altogether too weak to account for the symptoms of the disease. It was also found in the case of some of them that the methods used for isolating them were sufficient to produce them by breaking up the complicated albuminoid molecules. It seems more than probable now that many of the ptomaines were actually formed upon the laboratory table during the process of isolation.

The peculiar poisons, however, are quite different. They have been called toxins or toxalbumens and are characterized by their extreme toxicity and instability. They have only been purified to a very slight extent, as almost every substance brought in contact with them destroys them. The greatest difficulties are attached to the study because at every step the results must be controlled by experiments upon animals so that one may be certain that their poisonous nature has not been affected. In some cases they are found in the solutions in which the bacteria have grown; in others they are so intimately connected with the bodies of the microbes themselves that any attempt to separate them leads to their destruction. This is peculiarly true in the case of cholera. Any attempt even to kill the cholera germ is apt to cause a partial destruction of the toxin, so that to get a toxin as active as that in the living cultures the germ must be killed by exposure to chloroform vapor; any other method means destruction of the toxin. In every case, however, where a specific disease germ has been isolated a certain amount of progress has been made in the study of its toxins. But it is not alone amongst bacteria that we find these toxins present. In the higher plants they have also been found, notably in the castor oil bean and in the jequirity, and in the animal kingdom everyone is aware of the extremely poisonous character of the snake venom which is due to the presence of a toxin closely resembling the bacterial poisons. It would not be possible to give an account of all these toxins in the time at my disposal so that I will confine my remarks to a few typical ones.

Perhaps the most striking in its effects, certainly the most poisonous, is the one which has been found in connection with the bacillus of tetanus or lock-jaw. Every one is acquainted with the fact that this disease may arise from an exceedingly slight wound. When it was investigated it was found that the bacillus which causes it never spreads from the site of the wound; and it grows there for a very short time, yet we find that a horse may die of tetanus caused by a slight puncture wound in the foot.

When we take into consideration the extremely slight development of the local disease and compare it with the truly terrible manifestation of systemic poisonning it seems almost incredible that the bacillus of tetanus can give rise to poisons intense enough to account for these symptoms. But we find that when we examine culture media (*e. g.* beef broth) in which the tetanus bacillus has grown, or when we attempt a chemical analysis of the organs of animals that have died from tetanus there is always present a poison quite terrible enough to give rise to the symptoms of the disease. This toxin is the most poisonous substance we know of, when separated from the cultures of the bacillus and purified to as great an extent as its very unstable character will allow, it is fatal in doses of 1 part of toxin to 300,000,000 parts of the body weight. This means that a fatal dose for a man of average size is $\frac{1}{4}$ mg. or about $\frac{1}{260}$ of a grain, which shows it to be about 250 times as strong as strychnine. It would seem as if it were hopeless to expect to combat a poison so intense as this, but we shall see that it is possible not only to counteract the effect of the smallest fatal dose of toxin but even 100 times this dose, and this not by a chemical antidote in the narrower sense, but by a substance isolated from the animal body. I will return to this subject again.

This toxin of tetanus then is characterized not only by its toxicity but also by its instability. It can only be partially purified, as I said, because of the way in which chemical substances act upon it. Even if carbon dioxide is allowed to bubble through a solution of it for a few hours it is destroyed. Heating it in the presence of water to 55°C. for an hour destroys it, whilst it will stand a much higher temperature when dry. It may be precipitated from its solutions by various substances, but this precipitation is only a mechanical one depending upon the entanglement of the toxin in another precipitate.

In the case of diphtheria the toxin has not proved as poisonous as in tetanus. This toxin has been isolated from diphtheria cultures from diphtheria membrane and from the spleen and other organs of persons who have died of the disease. It is quite as unstable as the tetanus toxin, perhaps more so, and all attempts to purify it have been unavailing. Like tetanus it is quickly destroyed by heat and its precipitation from solutions in which it is present depends upon its being entangled and carried down mechanically. The first to study it thoroughly were Roux and Yersin of the Pasteur Institute. They found that when the diphtheria bacillus was cultivated for weeks in beef broth the culture medium became very poisonous and that this poison was still present when the bacilli were separated by filtration. They succeeded in partially separating the poison by causing a precipitate of phosphate of lime in the solution. This purified toxin was fatal in doses of 1 to 200,000 but much stronger concentrations have been made since. When introduced into the body of an animal it causes there all the symptoms of systemic poisoning which are characteristic of the disease, and when the animal is examined after death the same changes in the tissue are found which are found in diphtheria itself. One very peculiar point in the action of the diphtheria poison is that when a smaller dose is given than enough to kill the animal in a reasonable time the animal may live on for several months, finally dying in an extremely emaciated condition with partial or complete paralysis. Even when the toxin is altered by heating this slow poisonous action may be present. There is no possible explanation as yet of this extremely slow action of the poison in some cases.

The toxins of snake venom have always been of intense interest to physiologists, and a large number of investigators have worked on them. In America we have had Weir Mitchell and Richardson ; in England, Wall and Armstrong ; in France, Gautier and Calmette. Little actual progress, however, was made until Calmette first published his investigations in 1892 upon cobra poison. In 1894 he published a second paper upon the poisons of the cobra, Holocephalus, Psuedechis, and the viper. The toxins of these snakes are produced by a gland which corresponds to the parotid gland of other animals, and consequently they are quite different in origin from those of the bacteria. In spite of this fact, however, they resemble them very closely in almost every point. They are very poisonous, very unstable, and are thrown out of solutions by the same means as the bacterial toxins. Aside from their toxicity, perhaps the most striking character of the snake toxins is their extremely rapid diffusibility. Once introduced into the body they spread with marvellous rapidity throughout the tissues so that in order to counteract their action steps must be taken almost immediately. Calmette shows this very clearly by experiments on rats. A rat is inoculated in the tip of the tail with a dose of the toxin sufficient to kill it in 40 minutes. Another rat is inoculated in the same place with the same dose but its tail is cut off after five minutes ; a third rat is inoculated in similar manner but its tail is cut off in one minute. The first rat dies in about forty minutes, the second in 1½ hours, the third in 4½ hours. The snake toxins differ in toxicity according to the source from which they are derived. For rabbits the cobra poison is fatal in doses of 1 to 4,000,000 ; Holocephalus, 1 to 3,450,000 ; Psuedechis, 1 to 800,000 ; viper, 1 to 250,000. The cobra toxin has not been concentrated or purified to the same extent as the tetanus toxin and consequently these figures hardly express its real strength, but assuming that man is as susceptible to the poison as the rabbit one-quarter grain would be fatal to a man of average size.

In the seeds of the castor oil bean, and in the jequirity seeds, two toxins have been discovered which are evidently of a very similar nature to the bacterial toxins. These have been called ricin and abrin respectively, and in most of their reactions, including their extremely poisonous character, they resemble the other toxins.

The question now arises, what are these peculiar bodies ? Is it possible to compare them with anything which will help us understand them ? When purified as completely as possible they have been subjected to analysis, but no conclusions of any importance have been reached. The results of different analysts, or of the same analyst at different times, vary so much as to show quite conclusively that they have not been working with pure material. From their characters various theories have been promulgated as to their chemical nature. Roux and Yersin thought that the diphtheria toxin was allied to the so-called enzymes or unorganized ferments. Another idea is that they are similar in character to the so-called albumoses which are found in the stomach during the process of digestion. These albumoses are precipitated by saturating the solution in which they are dissolved with ammonium sulphate ; they are insoluble in alcohol and soluble in water, are easily affected by heat and are very unstable. The toxins present all these characters, but as it is almost impossible to cultivate bacteria in culture media without having albumoses present, the explanation is open to the objection that these reactions of the toxins are due to an admixture of albumoses. Brieger has recently found that as the albumoses disappear from tetanus cultures and the cultures become stronger in their percentage of toxins, the toxins conformed less and less to the albumose reactions. It seems probable then that this explanation will not hold. A third explanation is that they belong to a class of compounds called nucleo-albumens; that is a class of bodies which chemically, approach very closely the peculiar nuclear substance of the cell.

There is one fact, however, which I have not mentioned yet and which has important bearings upon the subject, and that is the unequal manner in which these toxins act upon different animals. Some animals are exceedingly susceptible to one toxin, yet very slightly affected by another. The cobra toxin kills a rabbit, as I have said, in a dose of 1 to 4,000,000 ; a dog on the other hand requires 1 to 650,000, and snakes themselves are quite unaffected by it. The diphtheria toxin is extremely fatal to guinea-pigs, whilst a mouse requires, as a fatal dose, a quantity sufficient to kill 80 guinea-pigs. Whence comes it that there is this great difference in susceptibility ? The question was answered by saying that varying degrees of natural immunity existed, but this is no explanation, until we know wherein this immunity consists. It was found in connection with diphtheria that if an animal were given less than the minimum fatal dose, or if it were given a dose of diphtheria toxin weakened by heating or by the addition of some chemical, it did not die but recovered, after a short illness. It was then found that it was capable of withstanding a higher dose of the toxin. This escape from death had left the body in a position to withstand a greater amount of the toxin. These doses could be continued until the animal could resist amounts of toxin many times greater than the fatal dose for animals not so prepared. By thus accustoming the body to the poison an artificial immunity was produced, but it was discovered also that this immunity was due to some substance in the blood, for if the blood serum of an animal so treated was taken and injected into another animal, the second animal acquired a degree of immunity proportional to the immunity of the first animal and the amount of blood serum introduced. This process of producing immunity which was first worked out fordiphtheria and tetanus by Behring, Kitasato and others is the foundation of the modern system of *blood-serum* therapeutics.

This immunity which some animals have naturally and which others may be made to acquire, is evidently due to a substance in solution in the blood which has been called an anti-toxin. The nature of this anti-toxin is shown to a certain extent by a consideration of immunity produced by introducing gradually increasing doses of toxin and comparing an immunity produced by introducing a quantity of the blood serum of an animal so treated. In the first case the immunity lasts for a long period of time, how long is not yet known. In the second case it only lasts for a week or so. It is evident from this that the anti-toxin must be continually produced in an animal immunized by treatment with the toxin, whilst in the other case it is soon lost by a natural process of excretion. It occurs there as a foreign substance, in fact, and is gradually destroyed as all foreign substances must be. We have to conclude from this that the anti-toxin is produced from the cells of the body of the immune animal and consequently we must look upon the cells as the responsible agent in the production of immunity. The fact that the introduction of blood serum containing an anti-toxin could protect an animal against an attack of disease, naturally lead up to the attempt to cure an animal already infected with the disease, and it was found to be successful. But very much larger doses are necessary to cure than to protect, and the length of time that the toxin or the microbe has sojourned in the body are exceedingly important factors. The dose of anti-toxin must be increased as more and more time elapses after the introduction of the poison. This of course depends partly upon the rapidity of absorption of the toxin and partly upon the fact that the anti-toxin is useful only in combating the toxin, not in restoring tissue destroyed by it.

It is not my purpose to give figures with regard to the results of these anti-toxin treatments, but I may say that in four diseases they have certainly been successful. The first is one in which the method of treatment was discovered long before we had any knowledge of anti-toxins in the blood, that is, Pasteur's treatment of hydrophobia. There is no doubt at all that this is a treatment exactly like the immunization of animals by introducing gradually increasing doses of diphtheria toxin. The blood of animals and men treated by Pasteur's method are found to have a considerable amount of anti-toxic value against the virus of rabies, and we may look for considerable improvement of the Pasteur method for hydrophobia as a result of the new doctrines of anti-toxins. Tetanus has been treated by tetanus anti-toxin successfully in a large number of cases, but it is always doubtful if we could have as many favorable results in tetanus as in diphtheria, because the introduction of the virus is usually so trivial as frequently to escape notice, and the first indications of the disease are only when the poisoning has gone on sufficiently long to give rise to the muscular contraction so characteristic of it. By that time the anti-toxic serum must be exceedingly powerful to enable the body to withstand the toxin already formed.

In the treatment of diphtheria by means of anti-toxin the figures of results hitherto reached are familar to almost everyone, especially those of the Paris and Berlin hospitals. The local manifestations of disease are so readily observed and confirmed by bacteriological examination that it is possible to hope for the introduction of the anti-toxin early enough to be of great value in the treatment.

In snake-bite Calmette has been able to immunize animals to such an extent that their blood serum may be used to cure other animals even when inoculated with doses of the toxins many times in amount that necessary to produce death, and there is no doubt that with the production of anti-venomous serum from larger animals the method will be used in India upon human beings, where so many die annually from this cause.

Ehrlich in his work upon ricin and abrin was able also to obtain an anti-toxic serum which was efficacious in curing the poisoning from these toxins in experiment animals, but I will not consider them at any length, but only in so far as they bear upon the general subject.

Antitoxic serum has been obtained in other diseases, but we will be able to draw all the conclusions we need from the one, which I have cited.

The first point to consider is the manner in which this ability to form anti-toxin in the serum arises. We have been familiar for years with the fact that persons may become accustomed to gradually increasing doses of the alkaloids, but this tolerance is something quite different from the tolerance of bacterial toxins. In the first case it is of very slow growth, if we represented it by a curve with the ordinates indicating the time and the abcissæ the dose, the pitch of the curve is very slight. In the case of the tolerance of bacterial poisons on the other hand the curve is very steep and not regular in its course. This is well shown if we take an example from the work upon tetanus. An animal has say a certain degree of immunity which we will represent by 1 to 4,000. It is given a dose of toxin; the antitoxic value of its blood drops in a day to about one-fourth what it was before, maintains that point for about five days, then begins to rise again, continues to rise until the seventeenth or eighteenth day, reaching a maximum point very much above the point from which it started. It then falls gradually, reaching a point somewhat above its original value about the twenty-ninth day. This is maintained for an indefinite period, but the curve gradually falls. It will be seen at once that in immunizing an animal for the purpose of obtaining the greatest possible degree of immunity it is of great importance to take into consideration the features of this curve. One of Roux's and of Vaillard's experiments upon tetanus anti-toxin is of interest here in comparing the end results of two different methods. Two rabbits of the same weight and of a similar degree of immunity are taken. In the space of two months each is given 103 c.c. of toxin, but in the one case in many weak doses, in the other in strong doses at longer intervals. At the end of that time the animal which has received the frequent small doses has a value of 1 to 100,000,000, the other only 1 to 500,000. The method of giving the toxin is not indifferent, and apparently within certain limits the anti-toxin produced is not directly proportional to the toxin introduced.

The amount of the anti-toxin present, however, is certainly proportional to the toxicity of the poison. Very much greater degrees of anti-toxic value have been reached in tetanus than in diphtheria or snake venom. In tetanus the antitoxic value of the serum properly prepared has exceeded 1 to 100,000,000, whilst in diphtheria it has not been possible to reach a point higher than 1 to 100,000, and in cobra venom even lower.

Although we now know so much about the method of preparation of the anti-toxins, it is still a very open question as to how they act. The name antitoxin is perhaps rather an unfortunate one, as it seems to indicate that they directly neutralize the toxins as an acid acts upon an alkali, but this explanation is altogether too simple. It has been believed that this is their action, and is still believed to be such by some, but in the light of recent research this cannot be accepted. The reason for this is, that when the toxin and the anti-toxic serum are mixed together in a test tube, and inoculated into an animal no intoxication occurs if the anti-toxin is present in sufficient quantities. But the change does not take place in the test tube but in the body after inoculation, as can be shown by a number of experiments. Let us take one. In tetanus a mixture of 900 parts of toxin and one part of serum of given strength is introduced into ten guinea-pigs in doses of one-half c.c. each. Of these ten, frequently two will show symptons of tetanus, but will recover. The remainder are not in the slightest degree affected. Two have been more susceptible than the others. Reduce the dose of the same toxin to 500 parts to one of serum and inoculate with one-half c.c. and nothing results, but make it 3 c.c. (six times the first dose) and they will take tetanus. Again, let us take a large dose of diphtheritic antitoxin and give it to a guinea pig, and then give it a dose of toxin. It is unaffected, but if we take another animal of the same weight, and give it an additional dose of the toxins of one of the putrefactive bacteria and it dies of diphtheria. The second toxin has prevented the diphtheria antitoxin from acting against the diphtheria toxin.

From all these facts it will be seen that the antitoxins do not neutralize the toxins, but they act as stimulants perhaps in the tissues, and enable them to in some manner act upon the toxins. It would be interesting to go into a discussion of the possible explanation of this, but it would involve a discussion of the whole subject of immunity. But it seems as if the term *stimuline*, as suggested by Metchnikoff is a much better one.

It must have occurred to many of you to ask if these antitoxins are specific for the toxins, and until a short time ago it was thought that they were. But it has been shown, in a recent paper by Roux, that whilst the serum of a healthy horse has no effect upon the cobra venom, the serum of one immunized against tetanus will neutralize it. It is not, however, as strong as the venom anti-toxin. The serum of an animal vaccinated against rabies is anti-venomous to a high degree. Rabbits treated for rabies will stand four to five times the fatal dose of cobra venom. Antivenomous serum renders rabbits more resistant to the abrin toxin, and anti-diphtheritic serum has also an action upon abrin.

This interaction of antitoxins is a new phrase of the question, and advance in this direction will be looked for in future with great interest.

This whole subject of anti-toxin preparation may be considered as the most brilliant achievement of modern bacteriology, and as yet it is only in its infancy. What may result, we must not venture to suggest.

CHAPTER III.

SLAUGHTER-HOUSES AND ALLIED INDUSTRIES.

In the previous chapter have been discussed some of the elements which enter into the problems which underlie the sanitary bearings of the subject under our present consideration. The primary question depends upon the factors which enter into the disintegration of dead animal matters, and upon the products resulting from the action of those saprophytic organisms which feed upon this class of dead matter. What these are specifically does not necessarily enter into the problem, it being sufficient for our purpose to know that they divide themselves into those (1) which may have a parasitic existence in living tissues, as well as being capable of living and multiplying as saprophytes or in dead animal tissues, and (2) those whose life is purely that of saprophytes. The distinction between these two classes has only within recent years been drawn with any degree of accuracy, and much as yet remains to be worked out before we can consider the classes as definitely understood or exactly defined. At least ten years ago, however, Duclaux described the part played in the decomposition of dead bodies in the production by anaerobes of ptomaines, whether as alkaloids, and what are now termed toxins in the tissues, and of gases recognizable as definite chemical compounds and of those of more complex constitution known rather by their effects than by their chemical constituents. As regards the former class some of them almost certainly are similar to such as are described by Bouchard in his recent work on "Auto-intoxication in Disease," as being formed by micro-organisms, more or less constantly present in the intestinal tract, and which, feeding upon the undigested contents of the intestines give rise to a series of compounds, some of which when absorbed produce the serious symptoms of poisoning by so-called toxins. He says:

> "The healthy man is not attractive to the microbe. Almost constantly invaded by infectious agents he reacts against them, and in this contest keeps generally uppermost to such a point that often the disease does not become even apparent."
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> "It is not thus with him when his vitality is weakened; then his means of defence diminish. Just as we see rushes become covered with soil when certain unusual circumstances are opposed to the natural flow of water, so certain microbes may invade the human organism, whose health breaks down, wherever by the fact of disordered nutrition the chemical constitution is modified. It is therefore a modification antecedent to nutrition which renders infection possible." . . . The biliary acids also, if they do not find a free escape outwardly produce fatal poisoning. All the soluble ferments elaborated by certain glands can exercise a poisonous influence either general or local. We find even in certain secretions—in saliva for example—products extremely toxic, and which are not ferments. Thus toxicity is only partly due to alkaloids. . . . "Perverted nutrition leads up to the development of new substances which may become toxic." . . .
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> "I will mention leucin, tyrosin, and all the imperfect excrementitious products which arise from insufficient elaboration on the part of the liver, and many other toxic substances, of which I know neither the names or the constitution, but whose presence in morbid urines I shall demonstrate to you physiologically. . . .
>
> "But the poisons which exist in the tissues and in the intestinal canal are also found in the urine, either naturally or modified by oxidation or water to nitrogenous or sulphur radicals; oxalic acid, in the state of oxaluric acid; phenic acid, in the state of compound sulpho-phenic, or phenyl-sulphurals, bodies of the acomedic series—indol, scatol, cresol; butyric acid as in the stomach, lactic acid, as in the stomach and first part of the intestine; acetic acid, as it is formed under certain pathological influences in considerable quantity in the whole length of the intestinal canal."

As regards the effects of such compounds when remaining in the tissues of animals killed for food little as yet is known, but remembering that many animals, either suffering from specific diseases as tuberculosis, from disease of one or more organs, or having congested and diseased intestines, either from insufficient and improper food, or from actually diseased food and which, in view of the almost total absence in Ontario of any inspection of animals prior to slaughtering, or of the meat after slaughter, must necessarily be put on the market as food, we can readily understand how the effects of such meat as food even though not decomposed may be most serious. It may be said that such products are destroyed by cooking and that such is to some extent true cannot be doubted; but it is only necessary for us to cite experiments which have from time to time been carefully made to show that a very considerable portion of any steak or roast beef are not, except with prolonged cooking, sufficiently heated to destroy even products readily broken up by heat.

The following are the results of some of these experiments:

> "With specimens of meat so prepared, Dr. Woodhead noted the temperatures at various depths below the surface, during various periods of boiling or roasting, and at the conclusion of the process, took the central portions and used them for feeding and inoculating test animals. For his feeding experiments he presently came to prefer pigs to other test animals, finding them to be more readily than others affected by tuberculous material in their food. The results at which he arrived are comprised in the following conclusions, and we do not doubt their accuracy:
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> In the boiling and roasting experiments, as ordinarily carried out in the kitchen, the temperature however high it may be near the surface seldom reached 60°C. (140°F.) in the centre of a joint, except in the case of joints under 6 lbs. in weight. Ordinary cooking is quite sufficient to destroy any smeared material that remains on the outer surface of the meat, *but it cannot be relied upon in the slightest degree to render innocuous the same smeared material when in the centre of a roll.*" The italics are Dr. Woodhead's. In another place he says: "Ordinary cooking, such as boiling, and more especially roasting, though quite sufficient to sterilize the surface, and even the substance for a short distance from the surface of a joint, cannot be relied upon to sterlize tubercular material included in the centre of rolls of meat, especially when these are more than 3 lbs. or 4 lbs. weight. The least reliable method of cooking for this purpose is roasting before the fire, next comes roasting in an oven, and then boiling."
>
> Dr. Woodhead is careful to make special mention of these "rolls." He had made them for his own experimental purposes; but such rolls of meat prepared by a slovenly butcher, smearing his slices with matter from tuberculous glands, or perhaps including some tuberculous membrane in his roll, would probably form the maximum of danger to meat consumers. No cooking operation would be likely to destroy tuberculous material which had been thus sedulously wrapped up In connection with Dr. Woodhead's inquiries, the use of raw meat-juice, as a special form of food for delicate children is not to be forgotten."—*Report Royal Commission on Tuberculosis, 1895.*

Returning, however, to the subject of dead meat, we naturally study first the conditions of the meat of actually diseased animals. Much has been said of that disease, tuberculosis, which is present to so great an extent even in the relatively healthy herds of Ontario. Unlike in some of the zymotic diseases, the bacilli of tuberculosis are present in the blood, and whether in all or not, certainly in the actually diseased tissues and the various organs and their secretions. In cattle this is true notably of the milk, as was illustrated by Mr. J. J. Mackenzie in the examinations in the laboratory of the Provincial Board of the milk of certain cows suspected of tuberculosis in 1893, and proven to have the disease both by injection of tuberculin and by post mortem examination. Thus in the Guernsey cow (Joan), which gave the tuberculin reaction October 10th, 1893, and practically no reaction on December 19th, and which was at the time of first injection and continued in good health, which gave no local physical signs in the lungs, and the udder remained healthy, showing no signs of disease at the post-mortem held six months later, the deposit from a whole day's milk centrifugalized readily gave [illegible] y stained preparations of the presence of the bacilli of tuberculosis in phagocytes secreted with the milk. The experiment was repeated a week or two later with the same results. In another badly diseased cow (Sarah) which was tested at the same time and killed on December 27th, showing in the post-mortem several softening nodules in the lungs, with active inflammation in one lung ; a large caseating hepatic gland, with the whole tissue of the udder looking as if stained with bile, but without nodules, bacilli were found in both samples of deposit from milk obtained in same manner as from Joan.*

The fatal attacks which from time to time are reported from eating pork, would seem to indicate that "measles" or the disease caused by the cysticercus, and still more frequently disease of the intestines from the feeding of offal and putrefying animal products do cause the presence of toxins in the flesh to an extent provocative of the most serious results. While it may be true that like the carnivora, as dogs, jackals, etc., pigs may develop a certain ability to digest such products, yet the natural constitution of the pig as belonging to the herbivora, would lead to the conclusion that they do not develop so much an ability to digest and assimilate such foods, as that a certain immunity to the effects of the products of such decomposed materials is created. That this immunity is readily overcome by some specially virulent poison produced by such decomposed food, is illustrated by way of experiments, such as that of Roger, who has shown that the rabbit, which has a natural immunity against symptomatic *anthrax*, succumbs to infection when injected with a culture of the bacillus of the disease, if at the same time it receives a sterilized or non-sterilized culture of *bacillus prodigiosus*.

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*CONCLUSIONS OF ROYAL COMMISSION ON TUBERCULOSIS, 1895.

"To recapitulate the information we have obtained from the witnesses who favored us with their experience, and from the researches of our three enquiries, together with our own conclusions :

"We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. The proportion of animals contracting tuberculosis after experimental use of such food, is different in one and another class of animals ; both carnivora and herbivora are susceptible, and the proportion is high in pigs. In the absence of direct experiments on human subjects, we infer that man also can acquire tuberculosis by feeding upon materials derived from tuberculous food-animals.

"The actual amount of tuberculous disease among certain classes of food-animals is so large as to afford to man frequent occasions for contracting tuberculous disease through his food. As to the proportion of tuberculosis acquired by man through his food or through other means, we can form no definite opinion, but we think it probable that an appreciable part of the tuberculosis that affects man is obtained through his food.

"The circumstances and conditions with regard to the tuberculosis in the food-animal which lead to the production of tuberculosis in man are, ultimately, the presence of active tuberculous matter in the food taken from the animal and consumed by the man in a raw or insufficiently cooked state.

"Tuberculous disease is observed most frequently in cattle and in swine. It is found far more frequently in cattle (full grown) than in calves, and with much greater frequency in cows kept in town cow-houses than in cattle bred for the express of slaughter. Tuberculous matter is but seldom found in the meat substance of the carcass,, it is principally found in the organs, membranes and glands. There is reason to believe that tuberculous matter, when present in meat sold to the public, is more commonly due to the contamination of the surface of the meat with material derived from other diseased parts, than to disease of the meat itself. The same matter is found in milk of cows when the udder has become invaded by tuberculous disease, and seldom or never when the udder is not diseased. Tuberculous matter in milk is exceptionally active in its operation upon animals fed either with the milk or with dairy produce derived from it. No doubt the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter.

"The recognition of tuberculous disease during the life of an animal is not wholly unattended with difficulty. Happily, however, it can, in most cases, be detected with certainty in the udders of milch cows.

"Provided every part that is the seat of tuberculous matter be avoided and destroyed, and provided care be taken to save from contamination by such matter the actual meat substance of a tuberculous animal, a great deal of meat from animals affected by tuberculosis may be eaten without risk to the consumer.

"Ordinary processes of cooking applied to meat which has got contaminated on its surface are probably sufficient to destroy the harmful quality. They would not avail to render wholesome any piece of meat that contained tuberculous matter in its deeper parts. In regard to milk we are aware of the preference by English people for drinking cows' milk raw, a practice attended by danger, on account of possible contamination by pathogenic organisms. The boiling of milk, even for a moment, would probably be sufficient to remove the very dangerous quality of tuberculous milk.

"We note that your Majesty's gracious commands do not extend to enquiry or report on administrative procedures available for reducing the amount of tuberculous material in the food supplied by animals to man, and we have regarded such questions as being beyond our province."

In the report of the Royal Commission on the effect of food derived from tuberculous animals on human health, we have, however, very positive evidence to the effect that pigs are especially liable to become tuberculous from being fed diseased meat.

> "The primary object of the commission, to learn the 'Effect of food derived from tuberculous animals upon human health,' was obviously one that could not be attained by direct experiment upon human beings. Yet it was upon this question that there had been least accord among the witnesses, though they did agree in their assurances that there was no valid evidence on the point to be had. The commission undertook, therefore, these inquiries as to the effect of tuberculous food upon the health of lower animals, in the expectation of obtaining information applicable to the case of the human subject.
>
> "Dr. Martin selected for his experimental research a variety of animals which differed in their customary food material, pigs, guinea-pigs and rabbits. The animals were fed with their usual foods, with the addition of some material (sometimes meat—much in the sense that a butcher might speak of meat—sometimes milk, but always uncooked) derived from a tuberculous animal. No particular examination for actual tubercle in the food material was made in the experiments now being recorded, but some care was taken to avoid any obvious mass of tubercle.
>
> "Of each kind of animal thus fed, a certain percentage was found to become tuberculous; of pigs, 36 per cent., (5 out of 14); of guinea-pigs, 16 per cent., (24 out of 145); of rabbits, 15 per cent., (2 out of 13).
>
> "The experiment comprised also a number of animals kept under the same conditions as the rest (pigs being members of the same litter), and only differing from the other animals of the experiment by receiving no material from a tuberculous animal in their food. Of these 'control' animals (numbering five pigs, 203 guinea-pigs, and eight rabbits), none became tuberculous."

Again the same report quoting from the records of the Copenhagen slaughterhouses states that of 8,292 swine, 1,272 showed evidences of tubercle.

Illustrative of the intestinal diseases of the hog is hog cholera, and its allied forms, which produces congestions and ulcerations of the large intestine, and congestions of the lungs. The bacillus of hog cholera, and its allied varieties, all closely resemble the well known bacillus *coli communis*, whose normal habitat is the intestine of healthy men and animals. These bacilli may remain even in the tissues of animals, and De Sweinitz has obtained from cultures of the hog cholera bacillus, toxins, such as cadaverin, methylamine and other products. Similarly Lorentz has shown that the blood of hogs, even when immunized against hog erysipelas, contains a toxin producing serious effects on animals injected with the serum of an immunized animal. Enough then has been shown to illustrate the positive dangers from the meat of diseased hogs used as food, even though not having undergone post-mortem decomposition.

When, however, we discuss the effects of eating tainted or decomposed meat, we deal with a subject familiar to every one. Here we have to deal with a condition serious exactly in proportion to its extent.

In living tissues nature maintains the struggle against hurtful influences up to the moment of death. At this point she turns her energies at once to the resolution of the dead tissues into their primary elements. Ordinarily exposed to the contaminated air of slaughterhouses, and the impure surfaces of blocks, floors, cloths and knives, the meat is at once inoculated with the bacteria of putrefaction present in infinite numbers. What names these bear is immaterial for our purpose; what they produce is of supreme importance. All are popularly aware of the dangers from a cut of the dissecting knife, and not less real are the dangers from wounds produced by *inoculations* of impure material on butchers' knives and blocks. But in addition to the dangers of infection from certain microbes, there are produced in the favorable conditions of dirty slaughterhouses, in the washings of the floors, in blood, offal and other tissues left to putrefy or be thrown out into hog-pens to be partially eaten and then to putrefy, not only the microbes but their products as ptomaines, or products of dead tissues and the gases which render the air in their neighborhood a veritable valley of Tophet. The effects of these conditions on the health of the animals subjected thereto is in a general way comprehended from the well known effects of decomposing organic matters in stables and in poultry-yards, being frequently seen in the latter in outbreaks of choleraic diseases in fowls. But whether appreciable in practice on hogs, there can be no doubt of their influence upon residents living in the vicinity of slaughterhouses and pig-pens. Allied to these is that most noisome of nuisances, a knackery. The volatile compounds from the decomposition of flesh, whether of animals or of fish, have too long been recognized as noxious to permit of any question as to their being nuisances in the sense of rendering the enjoyment of life and property uncomfortable; but their positive influence in causing malaise, nausea and diarrhœa must be considered as unfortunately too well proven to admit of discussion. That they play another potent influence in giving to specific disease a serious or even fatal character has now been equally well proven by positive experiments.

Thus in very recent experiments made by Alessi in the Hygienic Institute of the University of Rome on rats, guinea-pigs and rabbits, the rats were confined in a close cage with perforated bottom placed over the opening of a privy, and the guinea-pigs and rabbits in similar close cages having a receptacle below into which their own excreta were allowed to accumulate, with the result that the animals which breathed these vitiated atmospheres lost after a time their normal activity, and became emaciated, although eating greedily. When these animals were inoculated with a small quantity of the typhoid bacillus culture they died within from twelve to thirty-six hours, while the same amount of culture injected into control animals produced no injurious effects. Similar experiments with bacillus *coli communis* produced similar fatal results. Alessi found that the effects of such volatile toxins diminished after a certain time, and suggests that in a similar way man may become habituated to breathing an atmosphere containing sewer gases, likely to produce typhoid infection in those unaccustomed to it. Abundant instances of the apparent truth of the last statement are familiar to every physician of long experience. An example before quoted in the reports of this board of the similar influence of slaughterhouse emanations is that of the Lambton Mills outbreak of typhoid fever reported by a committee of the board in 1884. Cases of the disease occurred in almost every house in a series of cottages situated to the east of a slaughterhouse some 150 yards distant, with a piggery attached. In every house at least one fatal case occurred, excepting one in which two young men had sickened about the same time. Fortunately they were removed to a house distant from the slaughterhouse where they passed safely through the disease. A further notable instance of the influence of bad air resulting from organic decomposition was related some years ago by Dr. Spohn of Penetanguishene. On the northerly slope of the village typhoid appeared in several houses, caused, it was believed, by a polluted well. From one of these a very serious case, having delirium, was removed to a tent on a high hill overlooking the bay. Within twenty-four hours the delirium had disappeared and the case proceeded to a good recovery. The effects of animal emanations on an outbreak of diphtheria near Walkerville may be seen in an instance reported by Dr. Hoar, medical health officer, of Walkerville, as occurring during the present year. The household refuse had during the winter been thrown out of a window and left to putrefy during the warm weather of spring. Diphtheria appeared in the spring with the result that in spite of the ordinary treatment seven persons died in the house of the disease.

In the experiments of Alessi, referred to, he was, however, unable to determine to what gases the toxic effects were due, since ammonia, hydrogen sulphide, carbon dioxide, carbon monoxide and ammonia sulphide failed in experiments to produce the same debilitating effects. Manifestly the volatile toxins are more highly organized nitrogen compounds not yet detected by the available methods.

It has already been stated that the effect of such products on persons exposed to them diminishes by continued exposure, and it may also be concluded that the effects are diminished by distance from the source of emanations, since naturally they are rapidly diluted by diffusion in the atmosphere. The diarrhoeal diseases prevalent in the slums of great cities, with their old houses and accumulations of organic filth, all, however, point to the same fact, viz., the potency of volatile organic emanations or gaseous toxins in producing disease.

As regards the practical measures which have been adopted for removing the evils due to these sources, the street-cleaning departments of great and smaller cities are now occupying the front rank. In such cities, too, the slaughtering of animals is in many instances relegated to a special building or abattoir so constructed and equipped as to prevent the accumulation of filth and the emanations therefrom. In America, however, and certainly in Ontario, the latter sanitary measure is practically undeveloped, though here and there attempts to deal with the matter have been made. Up to the present time, however, the most that has been done has been to regulate under the by-law of the Public Health Act the location of slaughterhouses. In a considerable number of cities and towns slaughterhouses have been either forced beyond the limits of incorporated municipalities, or beyond the limit fixed by by-law, viz., 200 yards from the nearest buildings or dwelling. In not a few instances, however, existing slaughterhouses have been permitted within the proscribed limit on consideration of keeping them so as not to be a nuisance, or the by-law has been altered to suit the convenience of some slaughterer. In Pamphlet No. 1, 1893, issued by the Provincial Board, the recommendations, regarding the construction of slaughterhouses and byres, of the model by-laws of the local government board, England, have been incorporated, and it has been our view that their adoption would be more in the public interest, than the mere insistance upon such distance from residences as might prevent or lessen any nuisance due to bad construction or bad conduct of the business. There are reasons why an old established business should not be interfered with without good reason, but there can be no good reason, either from precedent elsewhere or in the matter of expenditure, why every slaughterhouse should not be regulated by a permit granted solely on the condition that the construction of the building be such as to make its being kept clean an easy matter to be attended to daily, under penalty of the cancellation of the license and the liability to the heavy fine which may be imposed under section 63 of the Public Health Act.

There has been no detail of public health administration which has caused more correspondence with the Provincial Board than the slaughterhouses and piggeries, and none which is provocative of more local bad feeling or criticism of the local boards. The moment warm weather supervenes the complaints begin, and they constantly illustrate the crude ideas with regard to cleanliness which seem to prevail with persons commonly engaged in this class of business.

The following will serve as specimens of many :

Dear Sir,—The matter complained of is a slaughterhouse, a pig pen, a horse stable and a cow barn, all on a lot 100x150 feet and connecting with other lots with private dwellings on them. The pig pen with from 10 to 20 pigs is about 40 feet from my door. Slaughtering is done 80 feet from my house and 20 feet from the public road. In the month of October and November I called the attention of the health inspector of the township to the state of this man's place and he ordered him to remove his pigs and stop slaughtering. He moved his pigs but continued to slaughter. I again called the attention of the health inspector and the reeve of the township. The matter was put into the hands of the deputy-reeve and there it ended. Myself with others went to the deputy reeve after scarlet fever had broken out in vicinity and he said he would see to it. That was in the beginning of December. Nothing has been done since and the scarlet fever still continues to spread. The blood of his slaughterhouse runs down the public road ditch and it is along this the fever broke out, myself being one of the sufferers. Hoping to hear from you and that steps will be taken to make this man keep the law and that the municipal council will be compelled to move in this matter, as I have put up with it for four years, but not quietly all the time.

I am,
Yours truly,

. . . .

Dear Sir,—My motive in writing to you is to complain of the annoyance caused us by the fearful smell of the slaughterhouse on the opposite side of the street facing our lot. . . . . I am confined to my house, my wife and daughter will have the ground to attend to. For days they cannot go out, the smell is so dreadful. . . . . They kill hogs in the public street. I never saw anything like it. There are four butchers here and the amount of stuff that is thrown to the piggery adjoining the slaughterhouse to smell is fearful. I am afraid it will breed sickness. The neighbors say it has not been so bad for years, so early in the season. I have complained, the neighbors have done the same, but still the nuisance remains. Two women took fever and died where he had the slaughterhouse before. The bad smell from the slaughterhouse was said to be the cause. After that the nuisance was removed and brought to us. How long is this state of things to continue ? Are we to run the risk of our lives for the sake of having this nuisance. I hope this matter will be looked after. By so doing you will greatly oblige,

Yours respectfully,

. . . .

These letters indicate the class of nuisance, the conditions under which many persons are forced to endure it, and the supineness and inactivity of the local authorities in whose hands the matter is placed. It is not that the law in the matter is defective, but local influence prevents its enforcement. The second letter is from a village within 20 miles of Toronto, and from the sanitary history of the place for several years past, it would seem that the village has fallen completely into the hands of several large slaughterers who supply meat to the Toronto market. The reeve seems a pemanency and is a butcher, and his influence dominates the electorate Many similar examples exist in the districts around our larger cities, but exist also in proportion in many parts of the Province

The second part of the nuisance is that already alluded to, and relates to the piggeries and the disposal of the refuse of the slaughterhouses. We have also associated with this, both as a source of local nuisance, and as an example of the unwholesome food supplied to piggeries attached to or in the neighborhood of cheese factories, conditions such as seen in the following letter:

"The condition of the Hilton cheese factory is as follows :

"The whey runs from a vat through a pump log full of cracks into a tank. The whey leaks and runs into the ground between the vat and the tank causing a perfume not much like a sweet-scented geranium. There are several hogs in a yard not twenty-five feet from the factory and close to the gravel road. They wallow in the mud caused by the water and whey, adding to the above-mentioned stench, making the worst compound of villainous smell that ever offended the nasal organs, and the neighbors are actually complaining about even that perfume.

"The Brighton Township Board of Health have given the owners of the hogs notice to take these hogs out of this mud hole. They say they will not do it, because it is on their own land. The Brighton Township Board of Health request that I write to you for instructions. I have put the case mildly before you, will you kindly answer the following questions :

"1. What shall be done with the owners of the hogs if they will not remove them ?

"2. What shall be done with the mud in which the hogs have been wallowing ?

"3. If anything is done who shall pay the expenses ?

"4. What shall be done with the ground into which the whey has been soaking ?

"Can the Medical Health Officer make this cheese factory owner keep it clean ?

"There is no use telling you that the milk will absorb the poisonous gases while being unloaded and while being made into cheese.

"Kindly inform me how to go to work to abate this abominable nuisance and I shall try to carry it out.

I have the honor to be,
Sir,
Your obedient servant,"

. . . .

So far as the extent of the local nuisance is concerned the piggeries are certainly in most instances a greater abomination than the slaughterhouses, the amount of refuse animal matter in them under decomposition being greater and the number of hogs kept usually being more at the cheese factories.

The nuisance in this case possesses in addition an importance from the commercial standpoint, from the fact that the volatile emanations are known to affect seriously the quality of cheese manufactured, and the continuance of such conditions indicates how slowly the public mind grasps the essential meaning of the gospel of sanitation which is being so persistently preached.

The Cheese Factories Acts which have been passed by the legislature, and the periodical inspection of the factories by the Inspector of the Cheese-Makers' Association have and are, there can be no doubt, doing something to educate cheese-makers, but the renewal of complaints year by year shows that much yet needs to be done in the matter of feeding decomposing animal matter to hogs. The Provincial Board has, during the past year, expressed very positive views, which are embodied in the following clause in the amendments to the Public Health Act, 1895 :

"Whenever any medical health officer, sanitary inspector or other health officer of the board of health, knows or has reason to believe that blood, offal or the meat of any dead animal which has not been previously boiled or steamed when fresh or before becoming putrid or decomposed, or which, although steamed or boiled, is putrid or decomposed, has been or is being fed to hogs, he may summon the owner, the person in charge, or any person found feeding the same, before a justice of the peace for violation of the provisions of this section, and whenever such blood, offal or decomposed flesh is found on any premises, the burden of proof that it was not intended to be so fed shall rest with the person charged. Should the charge be proven, the health officer making the charge may seize and carry away, or cause to be seized and carried away, the animals, whether dead or alive, to which the aforesaid blood, offal or unboiled or putrid meat has been fed, in order that the said animals may be destroyed or so disposed of as to prevent them from being exposed for sale or use for food for man."

It must certainly appear that local boards are now placed in a position to deal effectively with the matter of piggeries and hog-feeding establishments. The gain commercially will, as in the case of cheese-makers, certainly lie on the side of these slaughterers and hog-feeders, who conform to the clause of the Act, since the losses from death of hogs and the quality of the meat of hogs so fed will ultimately result in the discrediting of the products of such places when known to the public.

The following suggestions contained in a valuable paper read by Dr. E. E. Kitchen, of St. George, before the Association of Executive Health Officers of Ontario, in 1893, on Inspection of Cheese Factories, indicate very clearly the possibilities in the matter of dealing in an intelligent and sanitary manner with the by-products of the cheese factory.

> "1. Have the factory built on an elevation and removed as far as possible from habitable dwellings. Let the whey be forced into a vat above the ground by a jet pump and there sterilized. Now have the vat connected with a properly constructed piggery and the whey fed there. By a plentiful supply of water the pen could be often cleaned and the solid and liquid contents run off into a large cesspool. This cesspool should be built and plastered with cement. Attached to this should be a smaller one similarly built, but not more than a couple of feet deep and connected with the larger by a syphon. Thus as the solid portion falls to the bottom, the liquid is drawn off and distributed by means of weeping tile to as much of the surrounding land as is needed, and thus acts as a constant fertilizer to growing crops. The solid portion can be mixed with earth and drawn to fields where it is required.
>
> "2. Have pipes leading from the vat referred to above, to several small enclosures where the pigs can remain in rotation. When field number one gets a fair share of manuring and is likely to become unsanitary, remove them to the adjoining enclosure, and the first one can be plowed and sown with corn, etc. This can be changed as often as necessary."

The whole subject comes so closely within the field which is covered by modern antiseptic medicine and surgery that no local board, with its medical officer, can longer be exonerated from the responsibilities attaching to the neglect of the enforcement of measures, now well understood, both as to the theories underlying them and the practical methods by which they are to be carried into effect.

CHAPTER IV.

THE INFLUENCE OF CLIMATES ON THE PREVALENCE AND CURE OF CONSUMPTION.

With the many volumes which have been written regarding consumption as related to climate, in most instances in laudation of some particular region or even some particular location, it seems unnecessary to here again repeat much of what is, even to the public, more or less of an "oft-told tale"; but it does seem desirable once more to draw attention to some of the principal factors which enter into climate in order that their bearing upon this disease may be better comprehended.

It cannot be too plainly stated that climate, as it relates to the health of a particular individual or family, must be understood to include primarily not alone or so much the atmosphere of the country, province or town where they live, as the air of the very house and lot where they reside. This cannot be too much insisted upon; indeed there seems nothing in the whole question of climate which requires so much the immediate attention of the public and medical practitioners, not to mention boards of health, as this question of "House Atmospheres, or Artificial Climates." So profoundly had the primary importance of this element of climate impressed itself, that I brought the subject before the Washington International Medical Congress in 1889, under the above title, and experience since then has only served to still more impress its importance.

It is manifestly true that every element in climate exerts its influence on the individual only when it comes into immediate contact with his body. The germless mountain air may pass over the neighboring manufacturing town, and not only have its ozone disappear by contact with the waste organic matter of the streets, but it will take up therefrom microscopic organisms naturally foreign to it, and in damp locations and dark closes, courts and cellars, receive a local character for dampness wholly foreign to the mountain air. How far the local conditions may effect the sanitary properties of any given atmosphere has been specially remarked concerning those Swiss valleys, where generation after generation has developed into a community of *cretins* with peculiarities which are now considered congenital. These valleys seem to be especially those facing northward, where late in the morning and early in the evening the mists hang heavy, since the sun does not till high in the heavens dissipate the chill vapors of these *cul de sacs* in the mountains. It will thus be seen that prior to every other condition we have to recognize the influences immediately affecting the air in which persons in temperate climates live during the greater portion of the twenty-four hours of every day of their lives. The importance of the qualities of this air will be fully recognized when it is understood that whatever such air contains is carried with every respiration into the air passages, especially the nasal organs. The qualities of this, as of all air, include the normal elements of oxygen, nitrogen, carbonic acid in minute amounts and of the new element argon; but to these we must add the volatile organic matters which in the neighborhood of towns, cities and even farm buildings, are more or less constant constituents of the atmosphere. As an example of local atmospheres which have constantly present such volatile organic constituents we have the air of schools, hospitals, prisons, crowded factories, etc., to which, in the latter, must be added the effluvia belonging to various industries.

Added, however, to such elements, more or less permanent, are the particles of living matter or micro-organisms so notably abundant even in the outer air of towns and cities, as seen in the following example:

"Air respired by an average man in twenty-four hours 11.05 cubic metres; average number of microbes in cubic metre of air of Paris, France, in 1884, 3,480; in centre of Paris, 1893, 6,040; in new park of Montsouris in 1884, 480; in park clothed with turf and trees, 1893, 275; in ward in Hotel Dieu, 3,250; in air of Paris sewers, 4,070"; and which, as seen in the following list of micro-organisms, must inevitably become lodged in the mouth and nasal passages, there to play such part as their own qualities render possible under conditions more or less favorable to their growth.

List of the Principal Micro-Organisms found in the Nose and Mouth.

A.—Parasitic or Saprophytic Forms.

Mouth-Bacteria—Non-cultivable.

Scraping from tooth, showing round, spiral, rod shapes.
Spirillum sputigenum—almost pure cultivation from human mouth.
Spirochaete dentium, from human mouth.
Leptothrix buccalis—various forms.
" *innominata—Miller's classification.*
Bacillus buccalis maximus—Miller's classification.
" " " " " *(high power).*
Iodococcus vaginatus— " "

Mouth Bacteria—Cultivable.

Bacillary forms, various (health), showing spore formation.
Cocci forms, various—cultivation on agar and gelatine.
Ascoccus buccalis—Miller.

Fermentation Bacteria-zymogenic.

Bacillus acidi lactici.

Colour-producing—Chromogenic.

Cultures of organisms producing red-coloured matter in tubes.
" " " *green* " " "
" " " *yellow* " " "

Not Classified above.

Micrococcus prodigiosus.
Sarcinae ventriculae.
Bacterium termo?
Bacillus subtilis.

Fungi.

Spores from upper air passages (aspergillus).
Aspergillus glaucus.
Penicillium glaucum.
Mucor mucedo.
Mucor racemosus.

B.—Pathogenic Forms in Upper Air Passages.

Cultivable for most part.

From sputum—Bacillus crassus sputigenum—Kreibohm.
Micrococcus tetragenus—Koch, Gaffky.
Inflammation—Micrococci in tracheal membrane.
Suppuration—Staphylococcus pyogenes aureus—Ogston.
" " *albus.*
" " *citreus.*
Streptococcus pyogenes—Ogston.
Varieties mic. pyo. tenius, etc.—Rosenbach.
Bacillus pyocyaneus.—Gerrard.
" *pyogenes foetidus—Passet.*
Gonorrhœa—Micrococci gonorrhœæ—Neisser.
Erysipelas—Streptococcus eyrsipelatosus—Fehleisen.
Pharyngo-Mycosis—Bacillus fasciculatus, round and other forms.
Tubercle—Bacillus tuberculosis in sputum—Koch.
" " *tissues of larynx.*
" " *lungs.*
" " *liver.*
Bacilli of decomposition in sputum.
Micrococcus tetragenus "
Leprosy—Bacillus in tissues—Hansen.
Syphilis—Bacillus—Lustgärten.
Rhinoscleroma—Bacillus—Frisch.
" *in capsules.*
Actinomycosis—Actinomycosis in tongue.
Diphtheria—Bacillus (false membrane)—Klebs-Loeffler.
Bacilli cultivations.
Micrococci in false membranes.
" *and bacilli, impure cultivations.*
Pneumoniae—Pneumo-bacillus (pneumococcus)—Friedlander.
" *in pus—Friedlander.*
" " *Fraenkel.*
" *in lungs—Fraenkel.*
Typhoid—Bacillus—Eberth-Gaffky.
Malignant Diseases-Psorosperms.

C.—Entrance of Micro-Organisms to Tissues.

1. Mycelial spores passing through epithelium in living tissues.

2. Development within tissues.

The investigator may also meet the following by contamination, etc.: Achorion schonleinii, tricophyton tonsurans, microsporon furfur, etc. Biondi's list included bacillus salivarius septicus, coccus salivarius septicus, micrococcus tetragenus, streptococcus septo-pyaemicus, staphyloccus salivarius pyogenes. Kriebohm mentions two non-cultivable forms found in mouth. These have not been included in the above list, as many of them are difficult to identify, and may appear under other names by different observers.

(1. "Breslauer Aertzliche Zeitsch.," Sept., 1889, No. 18.)

(2. Flugge, p. 319.)

As remarked by Professor J. McIntyre, of Glasgow, in his Presidental address before the British Laryngological Association, "These organisms lie dormant in diseased teeth, in the tonsillar crypts or the accessory sinuses of the mouth awaiting conditions necessary for their development, having been brought to the mouth and air passages by means of air, food, water and clothing." Regarding these forms Dr. McIntyre further says: "The study of etiology promises to be particularly valuable in the way of treatment. It has emphasized all that has hitherto been written upon the question of hygiene, and the prevention of disease has been made easier by accurate diagnosis."

In addition to the constituents of the atmosphere, there are, however, those physical conditions which according to many play most important parts in the formation of what is called climate. I, of course, refer to moisture, temperature and weight and the ensuing variations of the atmosphere dependent upon the different degrees in which these conditions affect one another.

Man, for instance, is capable of sustaining life with an atmosphere several inches heavier than the normal at sea level, and has been known to exist for short periods at heights several miles higher than that of the sea level. He may live in atmospheres habitually saturated with moisture and sustain life in a sirocco which has practically been robbed of its moisture; and he can exist in a dry air at temperatures higher than the boiling point, and live in the extremest cold of an Arctic winter.

With such marvellous powers of adaptability, experience, nevertheless, must lead us to conclude that, while there is no such thing as the absolute in climate, there must yet be combinations of the various elements which give quality to the atmosphere, which have been proven to be most conducive to the health and well-being of mankind. Within limits, however, the study of races has shown that natives living for generations under certain climatic and social conditions, have developed an ability to live a more or less normal life, where the non-acclimated find existence difficult. In other words there has been evolved a condition of harmony with their environment which in many ways has been shown to be possible for other orders of the animal as well as of the vegetable kingdom. Without elaborating this statement by illustrations, it will be apparent that just as malaria and yellow fever have their natural habitat, and natives of paludal subtropical areas become more or less acclimatized to diseases peculiar to those regions, so even in the climate represented by London with its fogs, a certain resistance has probably been established to the maleficent effects of such an atmosphere which would soon prove fatal to persons normally constituted as regards other atmospheres and climates. This analogy will hold good to a greater or less degree as regards residents of low or high altitudes and of humid, as compared with dry climates.

Turning, however, to the disease under consideration, it is apparent that, while more or less world-wide in its prevalence, there are climatic conditions favorable or unfavorable for its development, and that the question of the development of individual or personal immunity to tuberculosis can only be of practical interest or value as studied in connection therewith.

Assuming the truth as gathered from statistical data, that temperate climates, *e.g.*, the great lake district of North America, are those favorable to tubercular disease, whether in man or the domestic animals, it is pertinent to our question to enquire whether this is true under all conditions in such a climate, or whether there are apparently certain conditions which specially tend toward the development of a prevalence of this disease. It must not be forgotten that this disease in its primary manifestations, whether in man or animals, belongs especially to the diseases of the respiratory tract. From statistical observation it must likewise be concluded that diphtheria, also a disease whose primary manifestations are in the respiratory tract, finds such a temperate climate favorable to its propagation. From statistical observations we have further to conclude that both of these diseases, so far even as settlements are concerned, have been progressive in their incidence; *i.e.*, there was a time in the new districts of Algoma, Muskoka, etc., when diphtheria was unknown, and there are many such settlements still, yearly, however, becoming less numerous. It is similarly true that there have been and are settlements where consumption is practically unknown. On the other hand it is equally true that on some of the Indian Reserves within Ontario consumption is, amongst these aborigines, epidemic to such a degree that, according to figures supplied by the physician in charge at one of these reserves, there was a death-rate in 1894 of almost 5 in the 1,000 of population.

Manifestly, therefore, there is a factor of infinitely greater importance than that of mere climate, *per se*. Prof. McIntyre in referring to the presence of microbes in the respiratory passages and to their lying dormant awaiting conditions favorable to their development, states that the resistance of nature to their development may be overcome by injuries to the mucous membrane, to pressure on the nerves of the part, to the absence of sufficient nutrition to the membrane, etc., etc. If the progression of these two diseases now known absolutely to be due to the presence of a specific micro-organism in each, is a fact, it must be true that a time existed when in certain districts and in certain houses and in certain families these microbes were not present in the air, and that when the diseases have appeared their germs must have reached the mucous tract and have overcome the normal resistance to them of the tissues. The sifting process of the vibrissae and cilia of the mucous tract and the germicidal action of the blood serum, normally secreted by epithelial cells of the mouth and of the nasal tract have manifestly been in certain cases unequal to their task; the deeper lymphoid and connective tissues, which have similarly carried on the struggle, have failed to protect, and a successful invasion of the citadel has been made. There has been either a constitutional or induced weakness of individual or of the general tissue cells of the body, the nervous or vascular arrangements have become either temporarily or permanently disordered, or the enemy has made his attacks in such numbers and with such persistency that exhausted Nature has surrendered, obtaining such terms as the enemy may choose to give.

It seems in this summation of the history of the events in the progression of the disease we can see that disease, like the electric current, will travel along the lines of least resistance, and we may now naturally enquire: What are the lines of least resistance? and, What are some of these causes in the matter of tuberculosis? The general and local elements of air contamination have already been alluded to, and remembering that they are more or less specific in their nature and removable according to the possibilities for good which belong to the work of the municipal health department of our towns and cities, we may refer to those conditions less cognisable and determinate, and therefore less capable of being brought under routine regulations, but which will be found nevertheless most potent in their influences. I refer especially to the conditions which mark our civilized house life as distinguished more or less from the house life of warm climates or even of some temperate climates, but especially those which distinguish it from out-door life or the house life which most nearly approaches this.

Naturally we have the effects on house air, belonging to local air contents as dust, and its conditions as regards moisture, temperature and movements.

Dryness. With regard to the moisture of the atmosphere of houses in temperate climates, it is found that the methods of heating adopted play a very important part. By some of the methods in common use, what may be called the normal moisture of respirable air is notably lessened, producing theoretically in so far as moisture goes, a climate comparable to that of high altitudes. Thus the average relative humidity of certain rocky mountain climates does not exceed 60 per cent. of saturation, and is, during portions of the day and certain periods of the year, notably less than that. Experiment has shown that the humidity in many houses heated by hot air furnaces and steam, falls at times notably below this. The bearing of this fact upon the organs of respiration will be better understood when the following physiological facts are stated.

Bosworth, in "Diseases of the Nose and Throat," states, "That the normal function of the nasal mucous membrane is to secrete mucus in such quantities as to keep the membrane soft and liable." This normal mucous secretion has 93 per cent. of water and robbed of a small part of this it becomes unhealthy. "Every breath passing over the mucous membrane to the air passages becomes surcharged with water, otherwise the mucus would become thick and inspissated. Hence it is apparent that a large amount of moisture will be abstracted from the body during 24 hours by respiration, amounting as commonly stated to 5,000 grains. Experimentation has shown that its source is especially the nasal mucous membrane, and notably from the erectile tissue of the turbinate bones.

As seen in experiments referred to in the above work, Aschenbrandt has shown that the normal temperature of expired air is about 86° F. with outer air 40° to 50° F., and Kayser found that it varies from 81.5° to 92° F., as the temperature varies from the freezing point (32° F) to 70° F.

From these experiments it therefore becomes evident that air in passing over the nasal mucous tract may be raised from zero or below it to a temperature approaching blood heat; in other words air is raised in a single respiration some 50° F. It is further found that during 24 hours the moisture which this saturated expired air holds, at or nearly the temperature of the mucous membrane, approximates 500 grammes or a pound in weight of water. Remembering that with every respiration some 25 cubic inches of air are exhaled, we have from 300 to 350 cubic feet of air inspired and expired in 24 hours, raised it may be 50° F., and no matter how little moisture is in the air inhaled it is always being given off saturated. According to Denison the capacity of air moisture varies as follows:

Temperature,	0° F.	Moisture,	0.5 grains of water.
"	100° F.	"	20.0 " "

From the standard tables it is therefore plain, given an increasing capacity of air for moisture with increasing temperature, that taking the normal percentage of humidity of air in this climate to be from 70 to 80 of saturation at the different temperatures throughout the year, the effect of the raising of outside air to that of our houses, or as in many instances reheating the same air again and again, is to present to the mucous membrane of the nose an atmosphere unsatisfied as regards its capacity for moisture, at say 70° F., to the extent of from 25 per cent. to 50 per cent., and which as it leaves the air passages always contains moisture to the point of practical saturation. What this may mean may be in part illustrated by Dr. Denison's comparison of the effects of the climate of Jacksonville, Florida, with that of Yuma, in Arizona, on body moisture.

Autumn, 1883.	Yuma.	Jacksonville.
Mean temperature	73.3	71.3
Grains of vapor in saturated air per cubic foot at given temperature (Glaisher)	8.33	8.33
Mean relative humidity	.428	.774
Cubic feet of air breathed in 24 hours	300.	300.
Grains of vapor inhaled.	1070.	1934.
Grains of vapor exhaled with dew point at 94°	5007.	5007.
Vapor exhaled more than inhaled	3937.	3073.

Taking the month of November, 1883, in which the average mean temperature of both places was the same, *i.e.*, 71.3° F., we would have the expired air in each case raised to about 90° F. or nearly body temperature.

These differences are, however, associated with notable differences in the barometer or in air pressure through difference in altitude, and only illustrate one point in the effect of dry house air. What influences are associated with the rarefied atmosphere and the brighter sunshine of higher altitudes on alterations of vascular tension, and of the hæmatogenic effects of the actinic rays of the sun will be referred to in another place. What is evident as an effect of this artificial dryness of house air is that a localized vascular activity is set up which tends to disturb the thermal equilibrium of the body. What this means is difficult of exact measurement, but we may in part understand it by the local sensation of cold when a part of the body is exposed to a draught, or the serious effects resulting in catching cold, described by Leitz "to the removal of heat to an unusual extent from the external or internal surface of the body; that this causes some functional disturbance which in its turn gives rise to certain morbid processes in some portion of the body." Bosworth indicates what such functional disturbance means. He says: "The true action of cold upon the body, in producing morbid conditions, is probably on those nutritive changes, which are constantly going on, and by which the animal heat is developed. . . . If heat production is arrested in a portion of the body under the action of intense cold, molecular death of the part ensues, as is the case when gangrene of a limb results from freezing. If the action of the cold is insufficient to arrest the nutritive processes of the part it may cause only inflammatory action." Illustrating the causes of catching cold, Bosworth further says: "Among the most familiar causes of taking cold may be enumerated sitting in a draught, wearing insufficient clothing, wearing thin-soled shoes, insufficiently protected feet, going from a warm room to a cold room, slight exposure while perspiring, etc."

Clearly then if the effect of such an excessive evaporation from the respiratory tract can be shown, by creating a localized congestion, and thereby a pressure on the terminal nerves, these will be rendered more sensitive to such chilling influences as would result from currents of cold and relatively more moist air when such persons pass into the cold outer atmosphere of humid climates. It is further a subject of interest yet to be investigated whether this continued congestion and excessive evaporation does not create so excessive a deposition of the salts of the blood in the nasal mucous as to act as an irritant on the terminal nerves of the part, thereby further altering the normal circulation of the capillaries.

Should it be argued that the conditions of a dry house air are comparable to those of the atmosphere of high altitudes, it may be answered that the normal relative humidity of such a place as Denver is 60 per cent.; but even though it be often as low at such altitudes there are so many other conditions present, such as decreased external pressure, that it does not seem probable that any true comparison can be instituted.

Altitude in Climate. The climate of high altitudes has in recent years become so frequent a subject of study that we may properly examine the other elements which enter into it apart from decreased humidity. The prominent element present is that of intense sunshine due to the so-called diathermancy of the atmosphere. This, apart from the direct physiological effects of sunlight on the body, means increased day temperature of the earth and therefore of evaporation. This evaporation is directly productive of cold, so that though the earth may be warm and persons may through absorption of radiant heat by their bodies have a sensation of warmth, yet the air temperature of high altitudes is relatively low and the relative humidity greater than otherwise would be possible. As a result of such conditions variability is consequently a most prominent factor of high altitude climates. Thus at Las Vegas Springs the traveller in December can see the boys skating on the ponded waters of the canyon at a point protected by a mountain from the sun's rays, while the women and children are going about the hillsides barefooted, while walking in the sun soon makes the removal of the coat necessary. The effect of this condition is seen in the daily range which to one who has not experienced it seems incredible. This is illustrated in the following table by Denison:

"Chosen without reference to this particular evidence, twenty-five dry and twenty-five moist prominent stations and health resorts in the United States give the following means:

—	Means of daily ranges.	Means of monthly ranges.
First—extreme dryness	36°.51	53°.65
Second—moderate dryness	20.63	49.38
Third—moderate moisture	17.09	45.48
Fourth—extreme moisture	13.61	41.55

"Again, taking the fifteen most and the fifteen least variable signal stations in the United States for 1883 (out of 136 stations), we have the following daily ranges averaged by seasons and for the year:

Fifteen stations.	Spring.	Summer.	Autumn.	Winter.	Year.
Most variable	30°.7	29°.1	28°.4	28°.5	28°.7
Least variable	12.1	12.9	10.8	12.0	11.9

The experience of those who have lived in or visited such climates is that the sensation of cold produced by the rapidly falling temperature is a most positive one and demands that natives even withdraw within doors for an hour or two, or like the native Mexicans, protect their air passages by a fold of their *serapes*.

There are, however, further definite effects in the direct effect on respiration of the rarefied air. This is described in the following words of Dr. C. Theodore Williams, of Brompton Hospital for Consumption:

"The skin is tanned by the solar rays, and especially by the ultra violent rays (Bowles), the circulation is at first quickened, and the heart's impulse increased in power, but at the end of six or eight weeks the pulse rate becomes less rapid and it eventually is slower than normal. Respiration is at first quickened, but after about the same time it becomes slower and also falls below normal, the inspirations being deeper and the expirations (Ruedi) more complete The quickening of the circulation and respiration is accompanied by thirst, by a reduction in the blood pressure and in the urea excreted by the kidneys, but more carbonic acid (Marcet) and water are eliminated from the lungs as might be expected from more oxygen being inhaled. Later on, when acclimatization is complete, the normal amount of urea is again excreted and the blood pressure increases.

"Coincidently with the slowing of the respiration, there is an extension of the thorax in several directions, causing an increase of the circumference measurements of from one to three inches with increased mobility of the chest walls."

Manifestly if with these conditions, undoubtedly favorable to activity of respiration, the effects of the diathermancy of the atmosphere are taken full advantage of by patients who by gradations of altitude or by natural strength have their circulation prepared for the lessened air pressure, there seems no good reason to doubt that most positive alterations in nutrition by increased waste and repair of tissue become possible.

The effect of diathermancy is illustrated by the following from a series of recent articles by Prof. M. Rubner, appearing in the *Archiv fur Hygiene*:

"E. Frankland has called attention to the advantage of Davos in the Alps as a resort for consumptives.

The following table at different places is given:

—	Sea level.	Shade temperature.	Sun temperature (bulb in vacuum).
Whitby	20 metres ...	32.2° C.	37.8° C.
Pontresina	1,800 "	26.1	44.0
Bernina	2,330 "	19.1	46.4
Diavolezza	2,980 "	6.0	59.5

It will be seen the Davos climate may be cold, the minimum winter temperature 1873-74 being −24.7 C., but with freedom from high winds the solar radiation, owing to the diathermancy of the atmosphere at a height exceeding 5,000 feet above sea level, produces such an effect that people sit in the open air lightly clothed and eat their evening meal with a shade temperature of −1°C. At 8.45 one morning the shade temperature was −1°C., the sun temperature +22°C., and at 1 p.m., the sun temperature was 43°C. On December 30th, the thermometer in snow at 9 a.m. was −26.4°C., the shade temperature −12.8°C., and the temperature in the sun at 9 a.m. was +25.5°C., and at 1.30 p.m. it increased to 38.5°C."

Assuming correctness for the conclusions we have arrived at regarding the different effects of dry air produced under artificial and under normal conditions, as of increased altitude, we may advert to other influences which play a prominent part in the production of climatic conditions under the broader aspect of the atmospheric influences over large areas or those subjected to generally diffused influences.

Forest Influences. Referring more particularly to the climate of Ontario, it is interesting to recall the popular belief that up to the last twenty-five years in most parts of the Province, and even to-day in our undeveloped territory, there were climatic conditions existant which were productive of a much healthier life even in cultivated rural districts than at present are possible. Any who have studied the question of the effect of progressive deforestation in Ontario or the Eastern States must have noticed most positively the great diminution in the flow of streams, which until very recent years, seemed chiefly confined to the creeks and rivers with shorter courses, such as those rising in the western central plateau, but which to-day have extended to the Great Lakes to such a degree as to force itself on the notice of the most non-scientific observer and seems likely to raise most serious problems in connection with navigation. Twenty years ago the effects were beginning to be remarked, but governmental intervention was then too remote a contingency to cause attention to its necessity to be seriously discussed. Even to-day it will be commercial and agricultural interests, and not those of the public health, which are most likely to bring into prominence the necessity for positive and conjoint action by the Federal and State Governments of the United States and Canada.

It is hardly necessary to say that the effects above referred to are those incident to the almost complete denudation of many of the more closely settled parts of the Province and the serious destruction of the forest floor by the fires which until very recent years have passed over many thousand square miles of virgin forest and are still not uncommon.

A summation of the influences of forest on climate may be said to include :

1. A cooling influence on soil temperature, and to a large retention of moisture in the soil and ambient air. As a consequence the extremes of high and low temperature within the forest soil occur much later than in the open, and both extremes are reduced, but especially that of the summer temperature. As incidental to this fact it may be stated that the range of ground temperature has, according to Ballard, an intimate relation to the prevalence of disease.

2. As a natural result of the previous condition the annual as well as the daily range of temperature is less in the forest than in the open, the temperature warmer in the spring than in the open, and these influences are not confined to the immediate areas of forest, but extend widely in proportion to the extent of the latter. Like the influence of the sea, the moderating influence on the air is greater than that of the absolute cooling effect. These influences are common to forests except in degree, whether situated at high or low altitudes.

3. Evergreen forest produces greater local uniformity in temperature near the ground and higher up, as well as more uniformity in temperature changes throughout the year.

4. The forest affects temperature by both obstructing wind and sunshine, and by the fact that the rising sap by evaporation from the leaves causes a reduction of temperature and an increase of moisture in the atmosphere surrounding the tree, which is thus equalized by the cooled sap being again replaced by a warmer flow from the roots.

5. The annual evaporation within the forests is notably less than in the open field; and while the evaporation in the forest is greatest in May and June, as well as in the open field, it is at this period that the difference between the two maxima is the greatest.

6. The distal influences of forest upon climate are chiefly due to the diffusion of the excess of vapor produced by them and by the air currents set up by the differences of air pressure and temperature and by their moderating the force of winds.

7. We may fairly assume from these considerations that an alternation of large forested and deforested areas are likely to create those conditions which

supply a climate freest from those extremes of heat and cold, moisture and dryness, sudden and rapid changes of temperatures and high winds which characterize treeless areas.

8. Finally, we may fairly affirm, as illustrated by the experiments in the park at Monsouris, that trees and forests play a direct part in the removal of microbes from the air, as illustrated by the old statements of belts of trees protecting villages against paludal fevers.

We have thus given in the several preceding paragraphs some of the data upon which to base conclusions as to what climates, general and local, and what individual localities from the standpoint of soil, forest, altitude, moisture and temperature may be considered as tending to the prevalence of consumption or to the promotion of those processes favorable to nutrition and the direct healing of tubercular deposits. We have seen what it is necessary to avoid; we may draw fair inferences as to what is required. The immunity of any new region being postulated, we have indicated, both from the social standpoint, as houses, their surroundings and atmospheres, and from the spread of population over areas and of their industrial operations, as in the destruction of the forest and in the establishment of noxious trades, how conditions are created favoring the spread of the contagion, if once introduced. That there are inhibitory influences upon the disease may be seen in the statistics of regions where life approaches in its simplicity that of those engaged daily in outdoor pursuits, and on the other hand we have to recognize influences promoting its prevalence by the creation of an environment inimical to the natural and complete evolution and maintenance of an organism wherein there is an harmonious adjustment of the functions, which in the highest degree make for the maintenance of health.

It must further, however, be realized, as remarked by Prof. Verneuil, of Paris, speaking of "de-urbanization" in the prophylaxis and treatment of tuberculosis, that even "country places have their differences, and in the matter of salubrity and therapeutic action in tuberculosis, country places differ much more than do city ones. Cities, in fact, only vary according to the more or less considerable degree of impurity or contamination of the respirable atmosphere. In country places not only is the air free from morbid germs and deleterious chemical products, but the air may be charged with medicinal properties, iodine, sulphur, chloride of sodium, and, finally, in certain thermal stations waters are found holding these elements in solution, and others, such as arsenic, which has a recognized influence on tuberculosis.

"Country places, then, considered from the hygienic or curative standpoint, contain the elements of many therapeutic methods; ærotherapy, thalassotherapy, hydrominerotherapy, without counting the action, not to be neglected, of altitudes and temperatures.

"Patients may be sent, according to the case, from a warm to a cold place, or the reverse; from the plain to the mountain, or the reverse; or from a simple hygienic locality, field or forest, to a curative one, the seashore or to thermal stations.

"It is important to study the qualities and curative properties of different rural localities, experience showing that one station will not suit all cases. Speaking generally, however, emigration to the country suits the majority of consumptives, renders them great services, and, until the discovery of the anti-tubercle, or vaccine, or the specific medicine which will destroy the tubercular virus, emigration to a more suitable locality (breathing a purer air) constitutes the simplest, most efficacious and most generally applicable means of resistance which we can offer to tuberculosis."

We have in Ontario, through the advances of the exact sciences, greatly widened our knowledge of the genesis and natural history of tuberculosis, and through the steady and persistent crusade, preached largely by this board and its allied association of health officers, the contagiousness of the disease and the conditions of immunity from its ravages have taken a deep hold of the public mind. It is hence with unusual gratification that we see prominent and wealthy citizens following up the work by giving much time and careful consideration to the establishment of a "Home for Consumptives," located in such a climate as is likely to prove most advantageous to those taking advantage of it, and with all the approved methods of house construction and equipment as elsewhere proved by experience most beneficial. We can see in such an enterprise the beginnings of what is destined to prove of incalculable benefit to the population of this Province and of Canada. The century of settlement in Ontario has passed, the energy of the old-time immigrant has spent itself making a modern society impatient for results. The old-time methods of thinking and acting are changed for the days of electric energy and strain, but we have illustrated more than at any previous age the potentialities of a dominating brain power to make the ordinary worker a mere machine, a slave to the ambitions, often not those of benevolence, of the man who has brain and skill and the power of wealth at his command. With this onward movement, seemingly inevitable, we have to cope with new dangers, demand other methods of protection, while the more powerful and deadly weapons of war must be met with still more cunning and scientific means of defence: the torpedo has its counterpart in the electric search-light. We need not ask whether Providence, who has endowed the brain with power to discover and develop all that marks the nineteenth century as complex in its society beyond its forerunner, shall equally provide that the good shall not fail in all the earth, or that progress shall not be made toward the accomplishment of the great world's purpose; but we cannot fail to realize that in all that bears upon the weal of the people nothing can play an equal part with the fulfilment of all that is promised by our gospel of sanitation. In the words of Sir W. H. Michael, Q. C., when urging on all the improvement of the artisan's and laborer's dwelling before the Social Science Congress, "By our public and private endeavors we can strive to create out of state medicine a religion of the state," and, as the case is urgent, we would say in the words of Horace: *Carpe diem!*

P. H. BRYCE,
Secretary.

PART II.

THE CHAIRMAN'S ANNUAL ADDRESS.

BY DR. J. D. MACDONALD, HAMILTON.

To the Members of the Provincial Board of Health:

GENTLEMEN,—The year past has not been an idle one for the Board, and still less so for its Secretary. The list of business done is tolerably large, too large to be noticed here in detail. It has included investigations into the drainage of towns; enquiries respecting nuisances complained of in many localities, and respecting the origin of outbreaks of diseases; into the condition of Ontario with reference to its protection from the inroads of *infectious* diseases, particularly of smallpox by revaccination of the healthy and the isolation of the sick. There have been lengthened discussions on the subject of tuberculosis. Scarlatina also demanded our attention, as did typhoid fever in its outbreak not far from this city and in a locality much frequented in summer by families of its inhabitants. Respecting this invasion it may be remembered that its origin was exposed and the mode of its suppression pointed out by Mr. McKenzie, the analyst of the Board.

The Board also has had its representatives at meetings of scientific societies. Dr. Kitchen at the Congress at Rome merits our thanks, as do also those who represented us at that held in Montreal at a later period.

The matters which required our most anxious attention had relation not alone to our own province, but also to the health conditions of the regions bordering upon us, to wit, those across the lakes. In these latter, in their large and populous cities and towns, the dangers which it is our duty to obviate often exist in a greater degree than among us; so that we and our neighbors, having a common interest as regards our health conditions, which it is the constant endeavor of our Board to promote, should see that within our own bounds there lurk no sources of evil to those who dwell near us, as well as to prevent, as far as we may be able, the transmission of evil from our neighbors to our own people.

It seems not out of place here to say, perhaps it may be only to repeat, that institutions, such as this which we form, have not only their own peculiar usefulness, but have moreover an influence in promoting a sentiment of common interest and interdependence on the part of neighboring peoples, and thus in removing the jealous rivalry so often existing between these, to the discredit of their good judgment and civilization.

We were constrained to have a special meeting in July, convened because of the appearance of smallpox in the northern part of the province, bordering on the lakes; the disease having been brought thither in vessels sent for the conveyance of lumber to the American cities. Since that time a perpetual vigilance has been necessary to prevent, if possible, the transmission of the disease from those cities. The effort, it has to be confessed, has not been altogether successful and up till the end of December we have to record a gradually increasing number of localities where sickness in this form has appeared, and where deaths have occurred. It is needless here to advert to the reasons why this loathsome and destructive, but preventable, malady prevails so much in the American cities near us. No doubt sanitarians there are strenuous in their efforts to check or to stop its progress. They however have to encounter unfavorable conditions, and these are likely to create many centres for the diffusion of the trouble. A short time ago a serious note of warning was sent to a life assurance company in Canada, from one of its medical advisers in Detroit, with reference to the increased risks which were to be encountered by the company in its business in that city, and he recommended that it should seriously consider the propriety, or the prudence, of including revaccination amongst its requirements.

It will be seen that such an institution must have an insuperable difficulty in adopting such a course. The necessity of this additional safeguard seems plain, in the general interest, but some stronger influence than that of a business association working in its own interest will be required to bring revaccination into general favor. The additional safeguard might again be in some way brought under public attention, by the efforts of this Board and its provincial auxiliaries. Happily, as yet, the people of Ontario have not had a very general necessity for testing the benefit of revaccination, but it is well that the measure should be kept before them as a probable necessity. In the meantime the prevalence of smallpox has become such, that it has been thought prudent, in the public interest, to issue weekly bulletins of its increase or diminution. So far increase alone has had to be noted.

Within the last year the Board has had to deal with a disease of uncertain nature. Its place in nosology we would have liked to have seen distinctly stated. The case was at one time said to bear a strong resemblance to leprosy. So far that suspicion has not been verified by the evidence of men who have had more opportunities of seeing leprosy than has been the lot of physicians in Ontario. The characteristic bacillus could not be found and the disease was concluded to be syphilis. The subject of it was a tramp of more than ordinary filthiness, who appeared to look upon his condition as of advantage to his vocation. He was remitted to a hospital for treatment. Perhaps it need not be noted, as a matter of surprise, that great difficulty was experienced in getting a hospital to consent to admit him.

The Board's committee appointed to deal with the subject of tuberculosis has been continuing its work. More especially has it been aiming at causing the public to appreciate the infectiousness of the malady. The efforts of the committee have not been so successful in that direction as some of its most zealous advocates of infection thought might be reasonably expected. It is hardly a matter of surprise that men are difficult to be persuaded regarding this matter. Differently from other diseases of a recognized infectious nature, as, for example, the eruptive fevers, phthisis and its cognate affections of bone or gland seem to have no periods of marked prevalence. It holds possession of the community continually, and destruction of life from it has no intermission. So its coming and going are not to be observed, as can be done in the class of diseases which have given a character, in the general opinion, to such as are admitted to be infectious. In its course, too, it is so gradual and insidious, that before its presence is suspected it has had time to give a marked character to the bodily frame and appearance of its victims, so that it has come to be thought to be not the cause of a certain bodily configuration and general appearance, but the result of these: and as in the meantime it has had a long opportunity of infecting a whole family, or a whole social circle of relatives and friends, it has come to be popularly regarded as an inherited disease, with the existence of which external conditions have merely a secondary relation. Further, being everywhere present and always, it seems as if it were of the character of a natural force, and too great to be successfully contested by puny human opposition. So numerous are its subjects, that the separation of the sick from the healthy, so as to prevent infection of the latter, would seem to leave too great and sad a gap in the family and social life of very many. It is such a consideration as this which makes the proposal of "homes" for consumptives so much the object of dislike to both the friends and physicians of those who are consumptive. Both friends and physician know that the final parting will come soon, but neither like to anticipate it. In the eye of both the departure of the consumptive for the "home" is, so far as the family is concerned, the first step to the funeral of one who is the especial object of the sympathy and affection of the household. The family physician likes not to be called on to recommend the step, and the whole family shrinks from the avowal which it implies. These considerations may be taken as a sample of many which are offered by the opponents of the establishment of "homes" for consumptives, and it may probably be some time before these parties will look kindly on the proposal that the Government of Ontario should legislate or vote money for such institutions. In the meantime the duty of those who believe in the possibility of stamping out consumption is to continue urging on the notice of the country and the Government the reasons for their belief, and to point out a practical mode of giving effect to it No doubt facts will force conviction sooner or later, and the infectiousness of consumption, as of tuberculosis in other forms, will come to be known and provided against; but the evidence will be of a kind which will be the more slowly admitted to be conclusive the longer it is drawn solely from observations on the human subject. From the insidious protracted nature of the disease, and by reason of the social habits of men, it is very difficult to prove infection. Indeed it is due to the necessarily imperfect nature of observations on man that the idea of infectiousness of consumption has been lost for a while. Sixty years ago the belief in it was very general, at least among the laity. About that time a school of physicians arose, one of whose efforts it was to discourage the idea of infectiousness, and old men have heard courses of lectures delivered, of which the aim was to ridicule it. Its absurdity, as we were told, was especially manifest in the spread of yellow fever and of Asiatic cholera. Some of us have books on our shelves, the works of men who have been our own contemporaries, whose denial of infectiousness extends even to such a disease as scarlatina.

We now can apply more correct tests than were attainable in past times. Microscopic research has given ocular proof of the reality of infection, and of the mode of its action, while observation of the disease, natural, or artificially induced, in the lower animals, has afforded opportunity for tracing more distinctly the passing of infection from one subject to another.

With respect to the infectiousness of tuberculosis many veterinarians have arrived at very conclusive results. The subjects by means of which these gentlemen have their more perfect opportunities for observation can be more easily kept in control and under observation. They are not permitted to wander at will, or go in the direction of evil influences. The result of the observation of many veterinarians seems to be all in favor of the certainty of infection as the source of tuberculosis in the animals which they treat, and so exclusively the source, that they assert, that no matter how a herd of cattle may be cared for and housed, whether its condition be one of dirt and general unwholesomeness, or one of cleanliness, comfort, and healthfulness, tuberculosis will appear among them if it is brought, and not otherwise. Unhealthy surroundings will not cause its appearance, and opposite conditions are no safeguard against it. These views have been distinctly put forth at a conference with veterinarians with a medical association in the United States, and reported in the *Boston Medical and Surgical Journal*, for the perusal of which I am indebted to Dr. Cassidy. I have thought it well to advert to this matter in this way, in order that attention may be called to the views of the Board on the subject of the infectiousness of tuberculosis in all its forms. The subject is not now one for discussion by the medical profession alone, but must take its place among those which are topics of consideration among all men. In the meantime the public seems hardly prepared to accept the views of the nature of phthisis or tuberculosis which have been just stated; and we may expect on the part of many as much opposition, and withal as heated, as that which is, in some quarters, being offered to vaccination. Nay, perhaps a better organized opposition, for maintaining it. We may expect to find opposed a large portion of the medical men of the country, who naturally will not look favorably on plan or system which may remove their patients from their own care. Until that opposition is weakened or overcome, much cannot be expected from governing bodies. These, necessarily leaning on public opinion, as they must do, under our constitutional systems, cannot go in advance of that opinion. It is beyond their function to do so. Therefore the general acceptance by people and by governments will depend upon the light which they get from this and other such institutions, as these persistently hold forth what are well-grounded scientific views on the infectiousness of this very prevalent malady.

The last matter to which we shall advert is one of surpassing interest, a new light, which, if found to be a true light, will be next in importance to the discovery of Jenner. Second to that discovery only, because it does not promise, like vaccination, permanence in its effect. In it we have not a prophylactic, as cowpox inoculation is, in a majority of instances. We refer, of course, to the new mode of dealing with diphtheria, by the subcutaneous injection of what in the meantime, for want of a better name, goes by that of "antitoxine." It we are to rely on reports from scientific centres, this substance, while apparently in the hands of some a means of saving many lives, is not to be allowed by others to pass unchallenged as a curative agent in diphtheria. Some men of mark still strenuously deny its usefulness, and aver that they who suppose that they have tested its usefulness successfully have been following a phantasm; that they have often been in error in diagnosing diphtheria, and of course as often wrong in their conclusion regarding the curative effects of the agents which they have been employing to stop the course of that malady. Notwithstanding this opposition to the claims of antitoxine, its employment is increasing, and so, also, its good reputation seems to grow. So hopeful is the medical profession of its good results, that there is no doubt but that the treatment by means of it will have a fair trial, and that its value will be determined before long, and if, as is claimed for it, it is curative in many instances, so as to make it manifest that the percentage of deaths is greatly lessened, its value will have been confirmed. Meantime, however, it is not to be forgotten that diphtheria epidemics have not been always of equal fatality, or attended by equal distress. Time may show that we are at present, the world over, experiencing an epidemic in which numbers of cases run their course favorably, owing, perhaps, to the prevalence of better hygienic conditions. Hence it is not impossible that a considerable proportion of the success attending the use of antitoxine may be delusive; but there appears no room for doubt, even in the supposed conditions, that much relief has been gained, much suffering prevented, and many lives saved by the injection of the serum charged with antitoxine. If the success of the material thus used becomes assured, other vehicles less offensive than the serum of animals may be found, and our friend the analyst of the Board has informed us that the whey of goat's milk has been found as useful as blood serum. The new substance is certainly less repulsive to the imagination than the old. Within our own working limits, we have occasion to estimate the value of this, or of any mode of procedure from which relief might be hopefully anticipated from the suffering resulting from diphtheria. On the list of contagious diseases which have prevailed in Ontario within the past year, and which has been prepared in the Secretary's office, it will be seen how great has been the comparative prevalence of this malady. It is nearly equal to that of all other acute infectious diseases. Nay, it may be said truly that, on the authority of that list, it is more than equal. In many of the reports transmitted to the office its "prevalence" is merely mentioned, or there are "some cases" or "some families" are affected, but the cases are not enumerated. There is, however, enough reported to justify the belief that in its prevalence and mortality diphtheria exceeds all other contagious diseases put together. In this character, we would, however, remind all that, destructive as diphtheria is, it is infinitely less so than the history of smallpox shows the latter always to have been, and still to be, in communities unprotected by vaccination. In view of the growing aversion to the comparatively trifling annoyance caused by vaccination as compared with the dreadful destruction of life of smallpox unchecked by this little operation, it will be well that our own, and other populations were reconciled to the practice of compulsory vaccination and that heavy penalties were imposed upon those neglecting it. No one, in the gratification of a fancy, or even in the carrying out of a conviction, has the right to make himself and his family a centre of mortal injury to the community in which he and his family or friends live, and which affords him protection.

Among the duties of the Board in the direction of improved water supply and of drainage, may be mentioned its successful endeavor in behalf of the former in the case of the town of Ingersoll, and its as yet unsuccessful dealing with the city of Hamilton, with regard to the latter. Ingersoll had certainly good cause to apply for our intervention, but a visit of inspection by a committee and its representation of the necessity of improvement, to those whose duty it was to afford the pure supply of which the town stood in need, were followed by immediate and successful operations on their part. As to Hamilton no such success has attended our efforts to bring about the improvement desired. The nuisance is excessive and affects the interest and the comfort of a large neighborhood. There are, however, interests opposed. The work, too, will be expensive, and the city hesitates to embark in it. The public burdens are already heavy and there is much to do which is even more important than the matter of its "inlet pollution." But in a little time, no doubt, steps shall be taken to move in the direction required by both the local board and by this Board. The sense of what is right and creditable to itself will cause the city to make pure and pleasant the shores and inlets of its beautiful bay.

REPORT ON VACCINATION IN THE TERRITORY ALONG GEORGIAN BAY AND LAKE HURON.

By S. N. Davis, M.D., Medical Inspector.

August 15th, 1894.

Gentlemen,—I have the honor to place before you my report in reference to vaccination in Algoma, the progress made while I was there, and the arrangements with the local boards of health as to further carrying out the work.

The reports of the latter are to be forwarded to Dr. Bryce, your secretary, as soon as possible.

I vaccinated three hundred and forty-nine persons at John's Island (near Kenabutch), Cook's Mills and Algoma Mills.

I had no trouble except at John's Island, it being due to the Swedes. At this place the men are employed by Moiles Bros., owners of the sawmills.

I will now refer to the places touched at by me in succession:

Killarney has no local physician. Dr. Stevens, of Manitowaning, or Dr. Carruthers, of Little Current, are sent for when necessary.

At this place I had notices posted referring to the necessity of immediate vaccination.

Manitowaning was the next point reached, being situated on Manitoulin Island. Dr. Stevens is the resident physician. I was able to make arrangements that seemed quite satisfactory at the time, but afterwards learned that difficulty had arisen, the nature of which Dr. Bryce will inform you.

Dr. S. informed me that he had vaccinated over four hundred Indians near this town, acting under orders from Ottawa.

Notices were posted in the town, calling upon the people to be vaccinated within ten days under penalty of a fine for non-compliance.

I may here state that similar notices were posted in every place that I could reach.

Little Current.—Drs. Carruthers and Dowsley are the physicians. I was not aware that the latter lived in Little Current until after I had left.

I interviewed Dr. Carruthers, who willingly undertook the work of vaccination, which has, I understand, proceeded in a satisfactory manner. In all I supplied him with two hundred points of vaccine.

Having but half an hour in this place, arrangements were made very hurriedly.

There was some alarm at one time in reference to the tug "Westover," which was said to have a case of smallpox while at Little Current, but as I saw the captain the next day I satisfied myself that no such case had occurred, nor was the boat exposed to infection.

Gore Bay has two physicians, Drs. Johnston and McIntosh.

Was unable to see them as the steamer "Pacific" reached this town at night on both up and down trips.

Wrote them, however, asking them to arrange with their local board for immediate action. This I understand was done, and the result should soon be placed in your hands.

Spanish River is on Aird Island, about six miles from the station of same name. This was a point of considerable interest, as the report of smallpox spread from there.

Some foundation for the report arose from the fact that the tug "Ella Smith," from Saginaw City, developed a case of smallpox after having called at this port. The man, Thos. Mahoney, of the 1st Ward, Saginaw City, died. The tug was quarantined and disinfected and the crew vaccinated. Spanish River is particularly exposed to infection. Nearly forty tugs, schooners, etc., from Michigan call there for lumber constantly during the summer and fall.

The mill of the Spanish River Lumber Company employs at least a hundred men, many of whom have families living there. The majority are from Michigan and have their families there, returning home in the winter to them.

Dr. Hershey, of Massey, is under contract with the company, goes to Spanish River three times a week.

Similar arrangements were made with him as with the others mentioned.

At the mouth of the Spanish River about seventy-five men are employed about rafts, making them up, etc. Dr. Hershey is also their physician, and promised to see that they were vaccinated.

Massey is situated about eighteen miles from the shore of Lake Huron, and on the line of the C. P. R.

It is a town of about eight hundred. Went there from Spanish River to see the reeve of the township, but was unfortunate enough to find him away. However, I was able to arrange for Dr. Hershey, who lives here, to undertake the work at once. This place may require considerable attention. From there the men are sent into the lumber camps, which are numerous thereabouts. It is about this time of year that they are being sent, and as the majority of the men are from Michigan the town is directly exposed to infection.

Kenabutch lies about ten miles from Spanish River station. A large mill owned by Cutler & Savage is in process of construction. About seventy-five men are employed there now. I saw the manager, Mr. Hamilton, and he gave me what assistance he could. Dr. Jones, of Webbwood, is the physician for this company. As I saw Dr. J. a few days later I was able to tell him what was necessary, and he promised to get the work done as quickly as possible, following the instructions given me by Dr. Bryce.

John's Island lies about six miles from Kenabutch. Reached this place by means of a tug. The owners of the mill, as said above, are Moiles Bros. A hundred men are employed here, about forty of whom are Swedes. It was with the latter that difficulty arose. Was delayed here on this account, with very poor after results. Before I left I had the usual notices posted, told the Swedes what would happen if further refusal was made on my return. Unfortunately was unable to go back to John's Island, but hope that Dr. Jones will be able to complete the work.

Algoma Mills has no resident physician, consequently undertook the work myself. Experienced no trouble whatever. Every child, with a few exceptions due to sickness, was vaccinated.

Cook's Mills has had no physician for several years. Before that time there always had been one living there. Drs. Jones and Hershey frequently are sent for.

The mill is owned by Cook Bros., of Toronto. Mr. Maxwell is the manager. At least one hundred men are employed. There are a considerable number of people unemployed by the mill also.

I expected to have had considerable trouble with the French, who form nearly half the inhabitants, but they were the first to desire to be vaccinated.

I have a list of one hundred and nine-five vaccinations which I have placed in Dr. Bryce's hands, all of which were made in this place.

Thessalon has one physician, Dr. McCort. The local board met at my request and entered into hearty co-operation. Mr. Thompson is the chairman of board, which was unanimous in its desire to take immediate action.

Dr. McCort was appointed public vaccinator, the people being given ten days in which to be vaccinated. Saw Dr. McCort a week later and he reported very favorably on the progress made.

Bruce Mines was next visited by me. Dr. Parks is the resident man. Mr. Miller is the reeve. Local board met and agreed on immediate action, but when I reached Sault Ste. Marie I received a letter from Mr. Miller, stating that action had been postponed until after the council met. On my way to St. Joseph's Island I saw Mr. Miller, who gave me his reasons *re* postponement, the only one being that he thought it necessary to consult the council first, and as that would be in a few days he thought a short time would make but little difference. He was quite certain that the work would be done, however.

Sault Ste. Marie.—Found at this place that the local board was almost dead. Resolutions had been passed at former meetings *re* vaccination, but practically little had been done.

Had some difficulty in getting a meeting, as several members of the board were away. Being successful at last, satisfactory steps were taken, Dr. Bradley being recommended as health officer. Notices and proclamations were issued similar to others. I left five hundred points here.

The town has four physicians, *i.e.*, Drs. Bradley, Hunter, Sherk and Reed, each of whom was to be supplied with vaccine by the local board on the condition that they would vaccinate at twenty-five cents per head.

Mr McGregor was the chairman *pro tem.* as the mayor was out of town. Municipality of Sault Ste. Marie consists of the townships of Sault Ste. Marie, Prince, East and West Korah. Mr. Penne, reeve. Dr. Sherk, medical health officer.

This township was waiting for the town to take action, as they considered themselves to be in no danger if the town was in none. However, Mr. Penne and Dr. Sherk were agreed as to the necessity of proceeding at once, and called a meeting, but I was unable to be present as I left Sault Ste. Marie before it was held. Have no doubt but that they will follow the example of the town.

About twenty-five miles from " The Soo " is a place called Goulais Bay, having twenty-five families. It rests with the board whether any action should be taken. It would be necessary to send a man there specially by boat, as that is the only means of communication. At varying distances ranging from ten to twenty-five miles from Sault Ste. Marie lie a number of villages in reference to which I was unable to make any arrangements, not having sufficient time. All these places receive medical attendance from "The Soo." If proclamations were issued by the Provincial Board it would be an easy matter to get a physician to take a day and undertake the matter thoroughly, but it would require a day for each place at least.

There were a number of lumber camps, about thirty miles on the average, from the lake shore, all of which will be at active work now. These places I could do nothing with. It would require considerable time and much expense to get it done in these camps as it should be done. Any further information that may be desired I will be happy to furnish.

Before closing I wish to report in reference to St. Joseph's Island. There are two towns, or rather villages, Hilton and Richard's Landing. In the latter there is a Dr. Ross, the medical health officer. I saw him and the clerk of the township, a Mr. Richards, together. The reeve, Mr. Cheer, was away, but they said that they believed no difficulty would occur, especially as the township of Hilton was going to move in the matter at once.

At Hilton I saw the reeve, Mr. Fisher, and Mr. Kitchen, another member of the board. A meeting was to be called on the Tuesday following. I was in Hilton on Sunday. The reeve was very pleased to take action, as no vaccinating had ever been done on the island.

Altogether about two thousand points were distributed or used by me in the month I was acting for the Provincial Board of Health. The difficulty of the work is not understood and the trouble in getting active measures to be taken cannot thoroughly be realized until one is on the spot.

I have endeavored to make my report as brief and at the same time as thorough as possible. I only regret not being able to meet the Board in person, so to make any additional explanation that may be required, and which might be made more clear than I can do by writing.

I have the honor to be, gentlemen,
Your obedient servant,

S. N. DAVIS.

P. H. Bryce, Esq., M,D.,
Secretary Provincial Board of Health, Toronto.

REPORT OF THE COMMITTEE ON EPIDEMICS ON OUTBREAKS OF DISEASE DURING THE QUARTER.

TORONTO, October 16th, 1894.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—It is with pleasure that your Committee reports the continued immunity of the province from any serious outbreak of smallpox. The several cases existing in August, in Dover and Chatham townships in Kent county, and in Sandwich East and Windsor, all recovered, and did not spread to second cases in any instance. These cases were all traced directly to Detroit. On October a second outbreak occurred in Sandwich East, two patients, relatives, taking ill at the same time. One on being diagnosed as suspicious went to his home in Windsor. All were vaccinated, but unsuccessfully and those recovered and sick are in the infectious disease hospital. The unfortunate continuance of smallpox in Detroit, there being eight new cases, 15 in all, within a few days, makes that city a continual menace to our western counties.

The smallpox record in neighboring states is as in tables at end of report.

With the onset of winter, this outlook must be considered sufficiently serious; but with state authorities on the alert it is to be hoped its progress will not be marked by any rapid spread. Localized outbreaks of scarlatina have been reported during the quarter; but September has been marked by the unusual prevalence of diphtheria. Three more or less widely distributed centres exist—one being in Ottawa and counties to the north and west, as far north as Mattawa; another has extended from Lindsay on the west, with interruptions, to Lakefield and Apsley township on the east, and the third may be described as extending from Orangeville with interruptions to Nassagaweya township to the south.

Owing to the fact of the dissemination of the disease being directly traceable in nearly all investigated cases to direct contact with previous cases, it needs of course only to be stated that the appearance of cases is dotted around some infected house, where the case has been neglected through non-notification or occasionally the absence of a physician in the first case or cases.

It is most disappointing to have further to direct the attention of the Board, and through it the public, to the fact that there are here and there practising physicians so lost to their sense of duty to the public that they, either to please some selfish householder or to get the advantage of some local rival, are prepared to sacrifice the honor of their profession and even go to the extent of endangering human life.

To illustrate these statements the following letters are made a part of this report, they having been received from various persons in relation to some one or several of these outbreaks.

(Letters from Lakefield, Mattawa, Lindsay, Erin, etc., were read.)

Comment on the state of professional etiquette as affecting the public interests as brought out by these letters is needless; but they illustrate on the part of some practitioners either so great ignorance with regard to diphtheria or such aberrations of moral vision that one wonders how the long-suffering people of some of these localities can endure their unseemly wrangles.

Years ago practitioners might have been excused for differing with regard to the specific nature of different cases of sore throat with exudation; but to-day surely none can be ignorant of their duties with regard to the treatment of every such case. This Board has notified every local of board of health and medical health officer that it was prepared to aid in the diagnosis of any doubtful cases; but it is four years since the most extended experiments were published by Roux, Yersin, and others to show that no clinical appearance is enough to justify the treatment of any throat with exudation as non-diphtheritic; while in some cases where no membrane is present to the eye, prudence, with cases of diphtheria in the vicinity, dictates their isolation for observation, since we now know the membrane is not necessarily present in the pharynx, or indeed, in the respiratory tract at all.

(Read extract from paper on Diphtheria read at Montreal meeting of A. P. H. A.)

There is no disease receiving to-day both from physicians and bacteriologists the same study as diphtheria, and there is none which in Canada demands more serious observation and attention.

Your Committee submits these remarks hoping they may result in some practical suggestion for dealing with the difficulties and dangers set forth by this correspondence.

All of which is respectfully submitted,

C. W. COVERNTON, M.D.,
P. H. BRYCE, M.D.,
Committee.

Smallpox has been reported in the following places in Canada and the United States up to October 15th, 1894:—

State.	Date.	Place.	Cases.	Deaths.	Total Cases.	Precautions.
Ohio	October 8	Cleveland	1	......	1	
Pennsylvania		Harrisburg	5	......	......	
		Carslide	4	......	......	
		Carrol Township	1	......	......	
		Shermansdale	1	1	......	
		McKeesport	1	......	......	
		Towanda	1	......	......	
		Philadelphia	8	1	......	
				2	21	
Wisconsin	October 8	Two Rivers	2	......	......	
		Liberty	1	......	......	
		Oneida	1	......	......	
		Wanwatosa	18	7	......	
		Township Milwaukee	1	......	......	
		City Milwaukee	102	21	......	
		Wausaw	1	......	......	
				28	126	
Indianapolis	September 9	Koscinoke County	4	......	......	
		Whitgey County	1	......	......	
		Indianapolis County	2	......	......	
		Marion County	1	......	8	
Manitoba	October 6	Winnipeg	1	......	1	
Ontario	October 2	Windsor	1	......	......	
		Township Sandwich	1	......	3	
Michigan		Detroit	15	......	......	
		Machester	1	......	......	
		Rives Township	1	......	17	
Illinois		Chicago	65	......	......	
Grand total	......	......	......	......	177	

Municipal Reports *re* Vaccination, August, September and October, 1894.

Counties.	Places.	Action.	No action.	Remarks.
Algoma	Spanish River	Action		
	Chapleau			R. J. Gibson don't care to accept appointment.
	St. Joseph Island			The physicians not duly registered.
	Bruce Mines			No doctor within 18 miles.
	Cape Mamausie			No doctor to perform the work.
Muskoka	Burk's Falls			W. Crawford, M.D., report and account sent in.
	Huntsville		No action	
	Brunel			C. Rumbull will advise as to action of the Board.
	Powassan			J. A. Porter, M.D., account rendered.
	Newholm			Children and others making arrangements for vaccination.
	Uffington	Action		
Waterloo	Galt			Dr. J. Wardlow, *re* extreme action from Palmerston vaccine.
Kent	Harwich			J. L. McRitchie says some parties object to vaccination.
	Blenheim			No local Board of Health. Dr. Langford requested to enforce vaccination.
Lennox	Selby		No action	Local board don't consider it necessary.
Glengarry	Williamstown		No action	A. Talkner, M.D., will begin vaccination in September.
Bruce	Cape Chin			Local board consider there is no imdiate danger.
Victoria	Boskung		No action	
	Bobcaygeon			Messrs. Boyd & Co. say camps are under local board of health.
Lincoln	Port Dalhousie	Action		Dr. Considine vaccinated about 200.
Wellington	Palmerston			Dr. Stewart, complaint made from Galt about severity of vaccine.
	Guelph Township	Action		
Grey	Owen Sound			Dr. Cameron has vaccinated "crews of Alberta and Athabasca."
Muskoka	Burk's Falls			Dr. Crawford says people in unorganized Township of Proudfoot refuse to be vaccinated except it be done by the Provincial Board of Health.
Brant	St. George			L. A. Addison wants vaccine points.
Peel	Woodhull			G. H. Bowels enquiring source of supply of vaccine.
Norfolk	Port Rowan			Dr. MacH. regarding supply of vaccine.
Stormont and Russell.	Winchester Township	Action		The Health Officer, appointed, with other physicians, a to vaccination, by order of Board.
Kent	Harwich Township	Action		Compulsory vaccination proclaimed by Board.
Bruce	Arran Township	Action		Compulsory vaccination proclaimed by Board.
Lanark	Bathurst Township		No action	General good health as reason.

15 counties. 32 reports.

REPORT OF THE COMMITTEE ON EPIDEMICS,

JANUARY, 16TH, 1895.

To the Chairman and Members of the Provincial Board of Health of Ontario :

GENTLEMEN,—I beg herewith to present the report of the Committee on the outbreaks of contagious diseases for the quarter.

Smallpox.—It will be remembered that I was able to report at the date of the last quarterly meeting in October that only one outbreak, that of Sandwich East township, then existed in the province. With, however, as was then remarked, the continued prevalence of the disease in Detroit, making that city a menace to the province, it was not to be expected it would long be free from outbreaks. In November further outbreaks occurred, of which the following table gives the details to end of 1894 :

Municipality.	Date.	Cases.	Deaths.	Source.	No. of introductions.
Essex county—					
Colchester township	June 14	1	....	Chicago	1
Windsor	July 24	1	....	Detroit	1
Windsor	Oct. 10	1	....	Detroit	1
Sandwich E	Aug. 10	1	....	Detroit	1
Sandwich E	Sept. 30	7	2	Detroit	1
Elgin county—					
St. Thomas	Dec. 9	1	1	Detroit	1
Frontenac county—					
Kingston	May 18	1	....	Barge from Montreal	1
Kent county—					
Chatham township	July 24	1	....	Detroit	1
Dover township	July 20	1	....	Michigan	1
Raleigh township	Nov. 30	1	....	Detroit	1
Middlesex county—					
Strathroy	Nov. 20	7	2	Detroit	1
Lobo township	Dec. 12	1	....	Detroit	1
Oxford county—					
Oxford township E.	March 4	3	....	Chicago	1
Perth county—					
Logan township	Nov. 20	3	....	Chicago	1
Wentworth county—					
Hamilton	June 3	3	....	English emigrant	1
Hamilton	June 20	1	....	Unknown	1
York county—					
Toronto	Dec. 10	2	....	Chicago, through exposure at station to Logan case	1
Total for 1894	....	36	5	....	15

While the Board may congratulate the province on its health organization which has produced for 1894 so satisfactory a statistic as the above, it cannot but express the opinion that the patient endurance of the lack of efficiency in dealing with outbreaks of smallpox in a neighboring state, which in 1885 and again in 1892 and 1893 encouraged and insisted upon the maintenance of a border quarantine by the Marine Hospital Service of the Federal Government, has ceased to be a virtue. For months chaos has reigned in the city health department of Detroit ; smallpox has been treated in private houses in the centre of the city; private physicians have gone on, in some instances, attending patients with smallpox, going therefrom to attend patients sick of other diseases; patients suffering from mild forms of the disease have, it is stated, been allowed abroad within a fortnight of the onset of the disease, and again and again have new cases occurred from people going from houses supposed to be disinfected, while such gross carelessness seems to have prevailed that persons unprotected by vaccination were allowed to work around the smallpox buildings. Of the latter it is stated the fatal case of smallpox which occurred in December last in St. Thomas is an example.

I am not aware of how far state supervision in the matter of the public health exists in Michigan, but certainly the state of affairs which has existed during the past eight months demands an early and radical cure on the part of someone.

The prevalence of smallpox during 1894 has had the effect through the constant pressure exerted upon local boards, of having vaccination carried out in Ontario municipalities to an extent greatly exceeding that of any year since 1885. The reports regarding the vaccine furnished by the Ontario Vaccine Farm, have, on the whole, been satisfactory. Its activity has been fully proven by the protection it has afforded in the case of those exposed in the several outbreaks of last year before the nature of the disease was known.

It must be, however, confessed that an aversion to systematic vaccination of their families exists on the part of persons prejudiced by a general dislike to some slight pain and feverishness, encouraged by the anti-vaccination squibs often published in the newspapers, and especially by the belief that the disease cannot be very dangerous, or if it is that they are the particular elect persons who will not take it. If, however, anyone is inclined to think that the old and wholesome belief in vaccination as a prophylactic against smallpox is dying out, he can be very readily convinced to the contrary if he should visit either Strathroy or Mitchell. In the latter place, a man diagnosed as having the smallpox rash, arrived in town from Chicago, was about the streets and hotels for an hour or two shaking hands with old friends, and subsequently spent some four hours in two doctors' offices. Without compulsion at least half the population of Mitchell was vaccinated within a fortnight, and hundreds in the neighboring township of Logan, where the patient was isolated. The belief that Vesuvius has become quiescent has at times become very general and the vineyards have crept year by year nearer the summit, but the smoke and uneasy rumbling will quickly turn scepticism into the active belief that its old activity has not yet disappeared.

The several outbreaks which have occurred during the year have again brought into prominence the need of some regular provision being made for supplying trained nurses and physicians at a moment's notice.

The resolution herewith submitted of the Pennsylvania State Board of Health illustrates an interesting phase of the smallpox problem. While replying to the Secretary of the Pennsylvania Board in the manner quoted, it cannot be said that until the Board has an experienced medical inspector specially detailed for visiting municipalities where outbreaks occur, making a diagnosis in suspicious cases, and seeing that isolation and vaccination measures have been actively undertaken, can we expect to deal with these outbreaks with that promptness and effectiveness that their serious nature demands. The fact is very well recognized by local practitioners and medical health officers that the merest rumor that they have been visiting a smallpox case will most seriously injure their practice, and makes the necessity of this Board having a medical inspector to step in and give even medical supervision until local arrangements have been made for an attending physician yet more apparent.

The circumstances of a local physician sending a suspected case to another physician's office to get rid of it, as referred to in the correspondence herewith submitted, or those where a case remained three days without medical attendance until my arrival to make a diagnosis, as well as the instance where immediate vaccination of all exposed persons was overlooked, still further illustrate this Board's needs in this matter of dealing with smallpox.

Diphtheria.—The need of a medical inspector to give personal attention and direction to outbreaks of smallpox is further amply illustrated by the presence of diphtheria in many localities

It will be remembered that the report of the Committee on Epidemics in October last referred to the unusual prevalence of diphtheria since the beginning of September. It was further stated that three more or less widely distributed centres then existed in the province. While in these there seems to have been recently a less general prevalence of the disease, this may be simply owing to the relatively extended information which has come in from other municipalities. The total municipalities reporting outbreaks during the last three months is at least seventy-five officially reported, while private information states that the disease exists in many other localities from which no reports have come, but whence physicians have sent for antitoxine. The genesis of these outbreaks, and the cause of so widespread a disease is a matter which, while of great scientific interest, is also of most serious import to the whole province. While it is true that the incidence of deaths tells most heavily on persons under ten years of age, yet when, as in the case of the Creemore outbreak, out of a population of 600, seven or more deaths occurred within as many days, or that in the little settlement of Warren, in Nipissing, seven deaths occurred in six months, or that in Mattawa some thirty deaths took place in that town, the effect on the native population in its natural increase becomes very apparent.

Remembering further, that in the matter of immediate causation, nearly every outbreak can be traced to direct infection, as where in Cavan township in a little centre, the disease spread from household to household during four successive months, and thence, if report be correct, spread to Manvers, where at one basket social at least twenty cases were inoculated from some unsuspected source, or in the last large outbreak reported at Sebright in north Ontario, which at least forty cases seem to have grown within a fortnight from infection carried to a tea meeting where people mingled for a single evening, it is apparent that we have a disease as contagious under the conditions of close contact in the close and fetid atmosphere of a church or school room as smallpox or any other of the eruptive diseases.

How generally diffused is the infection in Ontario may be gathered from the accompanying statement that, with even the imperfect methods of collecting information, the disease was reported during 1894 from 110 municipalities, or more than one-seventh of all organized in Ontario, and that during the last quarter at least 75 municipalities have reported its presence. Further, to gauge the number of cases the incidental reference in reports, generally written for the purpose of obtaining literature as the Health Acts, pamphlets on "Checking Contagious Diseases," etc., from 20 municipalities, give a total of 200 cases, which probably, as illustrated by the Sebright outbreak, do not represent a tenth of what occurred before the epidemic had spent itself. Or taking outbreaks in the cities, such as Ottawa, Hamilton, Toronto, Kingston or London, we find thirty to forty per month, or as in one of our towns of less than 10,000 population, twenty-five cases in thirteen days of the present month, it is manifest that we have present a disease causing a percentage of deaths from twenty-five to thirty-five, of cases mounting up during the year at the present rate to several thousands.

Were smallpox present to even a hundredth part that diphtheria has been during the past five months, the business of the province would be paralyzed.

With the facts as indicated before us, the question demands an answer, "How is the general prevalence to be accounted for?"

Let it be granted that mild weather in winter means damp weather, and that in our climate indoor life for several months is compulsory in large measure, we have as the first factor a tendency to colds and congested mucous membranes, and in the latter, the ready method for the communication of disease from one person to another. But we know now beyond question that speaking generally, diphtheria will not come by accident, and that some infected person must introduce the disease before its spread through a house. We know, too, that tonsilitis, the common sore throat of children, is present where no diphtheria exists; but we further know from the labors of Yersin, Roux and many others, that any exudation in tonsilitis is probably infectious and that no clinician dare say with certainty that in any given instance the exudation is not diphtheritic.

Thus in the forty-four cases of true diphtheria examined in detail by Chaillou and Martin in Roux's laboratory early in last year the exudat was so slight that the amount of membrane was small in the early stage in thirty of these.

With these facts published in a hundred medical journals, and referred to even in the daily press, what do we find even in Toronto the Good, like Athens of old "The Eye of Greece." I give but two examples, which, within the past fortnight have come within my official knowledge.

A letter from a medical officer asking for antitoxine for treating a family not forty miles from Toronto, stated that the outbreak occurred through a young woman going home from Toronto from a house where diphtheria was stated to exist. Enquiry from the medical officer of the city elicited the fact that a case had been reported from a certain house which happened to be a store, on a certain date in December. Within two days a further notice was received saying the child attacked was convalescent, as it was only tonsilitis. In a second communication the officer in the country stated he was informed a second physician had been in attendance, and name was given. I made enquiry of the last named physician, who stated that he had been called in to attend a child at said house; that he had informed the family it was diphtheria, selected a room on the third story, ordered the other children away, and said he would call in the evening. On arriving home a telephone message had been received that he need not call again as another doctor would take the responsibility of the case, so he did not report to the health officer. The medical officer of the city had been deceived with regard to the first physician's opinion, and accepted that of the latter in good faith, with the result already stated.

A second case is where a physician had been called to see a child on another street and stated the disease to be diphtheria. His opinion, it seems, was not agreeable to the family, and a second physician was summoned, who said it was not diphtheria. The first physician had reported the case to the health officer, the latter sent his inspectors to inquire and take any necessary precautions. The child died. Then a difficulty arose, as children seldom die of tonsilitis, so, in order to square matters, physician No. 2 gave a certificate of death as effusion of the glottis. In correspondence with the medical officer I made the remark that, now that facilities existed at the health office there ought to be no serious difficulty in city physicians sending specimens of membrane for bacteriological diagnosis. He replied by stating, "We are willing at all times to perform for medical men in the municipality the bacteriological examination of exudations upon the throat, but unfortunately medical men think that in many of these cases it is a reflection upon them as to their ability as diagnosticians and do not care to avail themselves of such facilities."

Having accounted for the spread of the disease, the more difficult problem arises, How is this prevalence to be lessened? At the outset, one would like to believe that the only cause were ignorance; but with such cases as the two cited, of unmitigated selfishness on the part of householders, and of a professional subserviance to the so-called interests of such, it would be mistaken charity to apply even to unpardonable professional ignorance such a misnomer. If such actions come within the pale of medical law or any other law, it appears to your Committee that the time has come, when they should be taken cognizance of.

That this Board has a right to urge this view of the problem of lessening the prevalence of diphtheria in supporting the hands of medical health officers and local boards in their fights with outbreaks of the disease, may be argued from the fact that it for four years has published annually the most recent results of scientific investigations of diphtheria and has supplied a copy of such reports to every practitioner in Ontario, and that since last May, notice by circular has been sent to every local board that the Provincial Board was prepared to examine, free of charge, every specimen of suspected diphtheria membrane properly packed and forwarded for examination. To what extent the invitation has been accepted will be shown in the Laboratory Report of Mr. J. J. Mackenzie, herewith presented. In order, however, to still further educate local boards in their duties, and to aid medical officers of health in their performance, your Committee cannot fail to again direct attention to the great good which your Secretary has found to accrue from his visiting centres of outbreaks. It is hardly necessary, however, to remark, that with such a distribution of the disease, it is wholly impossible for him, with his other duties, to more than incidentally touch this field of the work of the Board.

That the Board is lending its energies still further to the solution of this most difficult problem of lessening the mortality from diphtheria, the plague of northern temperate climates, is seen in the action it has taken towards testing the curative and preventive value of the new remedy, antitoxine, the outcome of modern biological investigation.

Acting on the instructions given to your Committee at the last quarterly meeting, your Secretary purchased at the earliest moment it was available, a small supply of antitoxine from the Biological & Vaccinal Institute, New York, under the direction of Dr. Paul Gibier, already known to the Board in connection with the Pasteur Anti-Rabies cure. The fact that Gibier has been for years a student of the methods of the Pasteur Institute gave confidence in the belief that his work in the preparation of diphtheria antitoxine would be of a reliable kind, and induced your Committee to procure the supply from him, as it was informed by letter that no supply from the Pasteur Institute of Paris was available for several months.

The first small amount was received, and after consideration it was believed that the Board would receive most satisfactory information regarding its value by supplying it under certain conditions, free to a certain number of the general hospitals of the province. To those that agreed to supply detailed reports of the results of its use, blank forms were supplied. As, however, comparatively few of these hospitals have contagious disease wards, only a limited amount (seen in the subjoined table) has been asked for. As requests began to come in from physicians in private practice for a supply of the antitoxine, some method had to be adopted for its distribution. Your Secretary, therefore, decided that any balance on hand would be supplied to physicians at cost price. The demand has been quite gratifying, showing at any rate that many physicians are interested in the therapeutic value of the new remedy.

Instructions for using diphtheria antitoxine.—Issued by the Provincial Board of Health.

One bottle of antitoxin contains 25 cc. and is sufficient for an ordinary case of pronounced diphtheria; but one bottle can suffice to render immune at least ten persons who are in danger of contracting the disease, if injected previous to the onset of the disease.

The injections as practised in the hospitals of Paris are given in the lateral part of the abdomen subcutaneously. In ordinary cases 15 cc. may be given at first and the balance of the vial 12 or 15 hours later. In more serious cases it is necessary to double and even treble the original dose. In order to obtain the desired results of the antitoxin treatment it must be remembered that it, like other remedies, will be of limited value should delay in its use take place until the toxic action of the disease on the nervous system has become developed. In other words, its administration will be most successful within twenty-four to forty-eight hours of the appearance of the membrane.

After the injection, which must be given slowly, and should be made without pain, it is well to give a light massage, in order to diffuse the liquid. Of course the local and general treatment must not be neglected in so far as the maintenance of the patient in an equable, moist atmosphere is concerned.

Small pieces of camphor will be observed floating in the liquid antitoxin. This is intended to preserve the fluid against the development of aspergilli or other inferior organisms which might, in spite of precautions, be introduced into the bottle during the manipulations. The supply not for immediate use should be kept in an ice chest. A 25 cc. syringe is used in connection with injection.

In the carrying out of these injections the strictest antiseptic precautions should be observed, in order that the beneficial effects of the antitoxin treatment should not be injuriously influenced by the possible introduction of the microbes of septicæmia. To this end the skin should be washed with a 4 per cent. solution of carbolic, in hot water, and the syringe should be boiled in a solution of the same strength for twenty minutes.

Instructions for sending specimens of membrane for bacteriological examination.

1. Remove with forceps, sterilized in a flame, fragments of membrane and place at once in a sterilized bottle.

2. Where exudat or membrane is but slightly developed, whether in tonsils or in nostrils, remove specimen by a pledget of absorbent cotton, taken fresh from inside of package, by grasping the cotton with a piece of fresh clean paper and not with the fingers, and placing it on the end of sterilized probe. The cotton with the specimen on it must thereafter be placed with sterilized forceps at once into the sterilized bottle.

3. The bottle and cork must before using be sterilized by boiling during twenty minutes.

4. The bottle with specimen must be closed by cork placed into it with sterilized forceps, and thereafter sealed with rubber film tied tightly over the cork.

4. A small glass phial will serve every purpose.

N.B.—1. Delay in forwarding specimens will endanger the success of the examination.

2. Bottles in every case must be wrapped in a piece of cotton gauze, and packed well with cotton wool into a metal, wood or strong pasteboard box.

3. Neglect of these precautions will mean that the specimen will not be received.

4. No charge will be made for any examination made.

5. Packages must be sent by express, prepaid.

6. Results of examination when telegraphed will be marked "collect."

7. Send packages addressed to J. J. MACKENZIE, B. A., Analyst Provincial Board of Health, Toronto.

Cost of antitoxin.

Orders for antitoxin, received by either telegram or letter, will be filled and sent promptly per express, C.O.D. to address of applicant, with bill therefor.

Money orders or other payments must be made in favor of P. H. BRYCE, Secretary of the Provincial Board of Health, Toronto.

(Copy of blank.)

Report upon antitoxine treatment of diphtheria.

TO PROVINCIAL BOARD OF HEALTH.

By.............................M.D. Address..................................

Name, age and sex of patient..................	
Date of commencement of disease..............	
Date of injection of antitoxin and amount injected in cubic centimetres	
Condition of patient at time of injection in regard to— State of nutrition—Appetite—Pulse—Temperature—Respiration—Extent of membrane and situation—Urine and other conditions	
Results of bacteriological examination of membrane. By whom made....................	

HISTORY FOLLOWING INJECTION.

Day of month												
Hour of day. A.M. P.M	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Pulse												
Temperature												
Respiration												
Urine, presence or absence of albumen												
Date of disappearance of membrane												
Date at which bacilli disappeared from throat mucus												
Date of discharge from hospital or return to mingling with public												
Sequelæ												
Other treatment carried on simultaneously with antitoxin treatment												

All of which is respectfully submitted,

C. W. COVERNTON,
P. H. BRYCE,

REPORT OF LABORATORY WORK DURING 1894.

By J. J. Mackenzie, B. A.

January 16th, 1895.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—The work of the laboratory during the past year has been, as heretofore, partly chemical and partly bacteriological.

The following is a summary of the work done:

Chemical analyses were made of water samples as follows:

Wells from Alton, Ont., four samples; well at Lorne Park, one sample; Lindsay public water supply, two samples; St. Thomas public water supply, two samples; Windsor water supply, four samples; Belleville, three samples; Oshawa, one sample; Belleville Deaf and Dumb Institute, two samples; Goldsmith, one sample; River Thames at Chatham, two samples; Lake Erie water near Chatham, two samples; Chanelle ecarté, Chatham, one sample; Port Hope, one sample, twenty-seven samples in all. A detailed account of these analyses is appended.

Bacteriological and chemical analyses were made of two samples of cheese and one of bread supposed to have caused ptomaine poisoning. The results were negative.

Bacteriological examinations were made of the following water supplies: Ingersoll, three samples; well at Lorne Park station, one sample; Windsor public water supply and Detroit River, four samples—sewage effluent, one sample; Battleford Indian Industrial Home, five samples (wells suspected to have caused typhoid); Belleville Deaf and Dumb Institute, two samples; well at Goldsmith, one sample; wells at Lynn, two samples; Chatham city supply, three samples; Port Hope, two samples; Peterboro', fourteen samples (river water, public supply and wells). A detailed account of the results of these analyses is appended.

A considerable increase in the work of the laboratory has been occasioned by the action of the Board in offering to make examinations (for the rural municipalities and towns) free of charge of suspected diphtheria exudate and sputum from suspected cases of tuberculosis. It is surprising, however, that, notwithstanding the exceeding importance of such examinations for the early diagnosis of these diseases, health officers and others should not have availed themselves more extensively of the Board's offer. It is practically only since November 1st that the numbers of samples sent in have begun to increase and this is apparently not so much due to the first circular issued by the Board as to the distribution of diphtheria antitoxine, the instructions in regard to the use of which included again a reference to the necessity of a bacteriological diagnosis and advice as to the method of taking samples and shipping to the laboratory for examination. In some cases even where advantage was taken of this offer of the Board the results have not been satisfactory owing to the culpable carelessness of the sender. Although the instructions were made as explicit as possible still some physicians have sent the samples packed in an exceedingly loose and careless manner, either from simple inattention to details or on account of the expense involved in packing carefully. I am inclined to believe the second has been more frequently the reason, especially since recently one medical health officer objected to paying the cost of the telegraphic report upon a diphtheria membrane!

The necessity of care in these matters is of so much importance to myself and others who may handle the packages that I have adopted the following procedure in regard to them :

If the material were not enclosed in a bottle it was destroyed without being examined and the sender notified of the reason. If it were enclosed in a bottle but the bottle not enclosed in a wooden or metal box it was examined but the sender was warned and if he transgressed again the sample was not examined but destroyed. This method has been successful in most instances but it will be necessary when new circulars are printed to be even more explicit than in the last.

In all, from June 1st, 1894, to January 15th, 1895, eighty-one samples have been examined (excluding, of course, samples destroyed). Of these eighty-one, thirty-six were suspected exudates, forty-one suspected sputum, two fæces from suspected intestinal tuberculosis, one urine from suspected tubercular cystitis, and one a tubercular liver abscess. Of the thirty-six suspected exudates, twenty-eight proved to be diphtheritic and eight non-diphtheritic ; of the forty-five samples suspected to be tuberculous thirty were found to contain the bacillus of tuberculosis and in the remaining fifteen it was not found.

These eighty-one samples were divided according to the months as follows :

Months.	Diphtheria.	Tuberculosis.	Total.
June	1	9	10
July	....	6	6
August	....	8	8
September	6	2	8
October	5	3	8
November	3	7	10
December	12	7	19
January, half month	9	3	12

An arrangement of the samples according to their source makes more apparent the lack of interest which medical health officers have taken in this work :

1 physician sent 6 samples.
2 “ “ 5 “
1 “ “ 4 “
6 physicians sent 3 samples.
9 “ “ 2 “
25 “ “ 1 “

Latterly, as far as possible, a record has been kept of the micro-organisms associated with the diphtheria bacillus in the exudates but in the absence of clinical data for the cases and with carelessness in taking the samples no conclusions of importance can be drawn from these results. As a rule the commonest associated form has been a short streptococcus or diplococcus (it occurs in both forms) which in many respects resembles an aberrant type of diplococcus pneumoniæ. The streptococcus longus, the most important associated form for the prognosis, has been noticed but seldom.

The method of packing described in the circular of the Board has proved fairly satisfactory where carefully carried out but the suggestion to seal the cork in the bottle with sealing wax I have found objectionable. I would suggest that in a new circular the sealing wax be omitted.

In a recent paper by Dr. Hesse, of Dresden, in the *Zeitschift fur Hygiene*, upon the bacteriological diagnosis of diphtheria, a suggestion is made which I think might in some instances be used here. Dr. Hesse does for the district in which Dresden is situated the same work in regard to diphtheria which I am doing here and he has found the following method most satisfactory. Medical practitioners are provided with sterilized test tubes through the cotton plug of which passes a sterilized glass rod. When a case occurs the rod and plug are removed from the tube, the rod is rubbed over the suspected membrane, then returned to the tube which is enclosed in a box and sent to the laboratory. When it arrives the infected rod is again removed and rubbed over the culture medium. The advantages of this are twofold: 1st, the greater cleanliness, and 2nd, the fact that if it is desired to take into account associated forms the drying of the film on the rod prevents the development of saprophytic bacteria which always occurs in a piece of moist membrane enclosed in a bottle. Since seeing this paper I have had one opportunity of using the method. This was in a case of diphtheria in which the exudate had disappeared from the throat ten days before. The rod was rubbed over a spot where the membrane had existed and was brought to me twenty-four hours later. I succeeded in getting a good culture of the bacillus of diphtheria.

It would not be possible to use this method in all cases but in larger municipalities with health officers fully alive to the necessity of an early bacteriological diagnosis I think it would be well to attempt it, and in case of special outbreaks it would certainly be the best method to pursue.

Among the eighty-one samples examined there are only two of sufficient interest to merit a more extended report. These were in connection with a number of cases of quinsy which partook of an epidemic character. The first case was fatal and was not considered diphtheritic at all except that there appeared on the fæces a glazed white patch as if membrane was about to form. The funeral was public and two of those who were at it, about a week later, developed throat trouble. In one case, a child, it was diagnosed follicular tonsilitis and ran the usual course; in the other case, a young man who had had several attacks of quinsy, the disease was diagnosed quinsy. Pus formed in the tonsils and there were glazed white patches in fauces, one as large as a twenty-five cent piece. Wipings were sent me of these patches and of the tonsils but the diphtheria bacillus was not found. The bacteriological examination showed only diplococci like *diplococcus pneumoniæ* and a *streptococcus.*

Four more cases occurred in the same house; pus formed in every case but one and the pseudo-membrane was present in all. A specimen was again sent me from the fifth case and the bacteriological examination failed to reveal the bacillus of diphtheria. On account of the interest attached to the case a more thorough examination was made. A portion of the cotton with the exudate was dropped into sterile bouillon, allowed to grow for forty-eight hours, and then injected (one c.c.) into a rabbit. The rabbit survived, having a slight lump at the point of inoculation for two weeks. Another portion of cotton with the exudate was enclosed in a pocket in the skin of a guinea pig. It developed a lump at this point which finally broke and the pus was found to contain *staphylococcus pyogenes albus* and *streptococcus longus.* The animal finally died.

The bacteriological culture from the exudate showed the following forms:

1. Staphylococcus pyogenes albus.
2. A form which occurred in diplococci and short streptococci.
3. Streptococcus longus.

A rabbit was infected subcutaneously with one c.c. of a twenty-four hours' bouillon culture of the *streptococcus longus.* It developed a lump at the point of inoculation but this disappeared in about ten days. At the end of two weeks the animal died and the streptococcus could not be found in the organs or blood but was still present at the point of inoculation.

The results of these inoculations seem to show that the *streptococcus longus* had in these cases a low degree of virulence and it is possible that its presence accounted for the diseased condition and for the apparently infectious character of the outbreak. In this connection it must be remembered that *streptococcus longus* is the form which is almost constantly present in scarlatinal anginas and there seems to be little doubt that wherever found it is simply a variety of the form which has been called *streptococcus pyogenes* or *streptococcus erysipelatis.* In virulence it varies exceedingly according to the source from which it is derived and in cultures in the laboratory any virulence which it may have is speedily lost.

A series of original investigations have been begun this year on the subject of synthesized culture media but the work is not sufficiently advanced to merit a report.

All of which is respectfully submitted,

JOHN J. MACKENZIE,
Bacteriologist and Analyst to the Board.

REPORT OF THE COMMITTEE ON EPIDEMICS.

APRIL 3rd, 1895.

To the Chairman and Members of the Provincial Board of Health :

GENTLEMEN,—Your Committee takes pleasure in reporting for the information of the Board and public the satisfactory position of the public health during the past quarter. As will be remembered at the time of the last meeting there were six cases of smallpox in the province at five places.

The report of Dr. C. A. Hodgetts, found elsewhere, gives in detail the origin and progress of the Aylmer outbreak, and that of the Guelph outbreak caused thereby.

The action taken by the local boards of health of Guelph city and township, and by the authorities of the Agricultural College, and by your Secretary, fortunately prevented the extension of what seemed at one time a very serious danger. Through this action the College term was continued without any serious interruption, and the business of the community was only temporarily disturbed. The outbreak illustrates, however, the necessity for this Board notifying all public institutions of the province to adopt systematic measures for the regular vaccination of inmates. The danger in such institutions here is accentuated by similar outbreaks in Yale University and at Storr's Agricultural College, Connecticut. The province is now free from a single case of smallpox, and a very considerable number of persons in every district where the disease has been, have been vaccinated.

Diphtheria.—While the disease has prevailed to a notable degree throughout the winter, there have been evidences of a general lessening of its prevalence throughout the province, both from report of local outbreaks, and in the demand for diphtheria antitoxine. Thus in

December	there were	40	orders sent out for antitoxine.
January	"	57	"
February	"	46	"
March	"	38	"

While the results of the use of antitoxine have, according to such reports as have been received, continued to be very satisfactory, it must again be stated that the Board has not been favored, except to a very partial extent, with a return of the blank form for reports sent out with every bottle, filled in with details of results. This is even more regrettable than the statement of receipts of payments for antitoxine forwarded. As stated before, it has been supplied at the New York cost price to practitioners throughout the province, and always perfectly fresh. Under such circumstances it would have been thought that remittances for the favor of the Board would have been prompt.

The statement submitted herewith shows the account as it stands to the end of March :

Amount purchased to March 31, 1895		$975 00
Amount for which payment has been received	$458 25	
Amount sent out for experiment to hospitals (free)	87 50	
Amount on hand (value)	36 00	
Balance due Board	393 25	
Total		$975 00

Scarlatina.—The correspondence from many parts of the province which is presented herewith shows, however, a general dissemination of outbreaks of scarlatina. They do not seem to be of a high degree of virulence, but as the reports show, there is everywhere a percentage of deaths. The immunity of the province from the disease during the past ten years has before been remarked upon; but there can be no doubt of the increased incidence of the disease during the past two years. Thus the mortality in the twelve cities from scarlatina in 1892 was ninety-nine, and in 1893, one hundred and forty-six.

The returns for 1894 are not yet complete, but it is probable that the rate throughout the province will have exceeded that of 1893.

Thus the cities had 116 for 1894:

Diphtheria and Scarlet Fever in Cities, 1894.

—	Diphtheria.	Scarlet fever.
Toronto	103	60
Hamilton	68	2
Ottawa	79	23
London	48	1
Kingston	5	
Brantford	5	23
Guelph	2	3
St. Thomas	1	1
St. Catharines	4	2
Stratford	1	1
Belleville	1	
Windsor		
	307	116

Your Committee would again call the attention of the Board to the fact of the proposed regulations in scarlatina, submitted for approval, being still under consideration, and would urge that the need of these regulations be again brought before the attention of the Minister.

The several communications presented with regard to outbreaks of contagious disease in the unorganized municipalities accentuate what has been said before with regard to the necessity for some more systematic organization, whereby the Board will be enabled to deal more satisfactorily with outbreaks when they occur.

Under the Act of 1889, much valuable work has been done by the stipendiary and police magistrates; but inasmuch as there are a number of growing communities without municipal organizations, and therefore without any means for giving financial support, it has been impossible with the grant at the disposal of the Board to organize any permanent health organization in these places. Your Committee would suggest that some recommendations be made with a view to so amending the Municipal or Education Act as to make provision for some kind of incorporation into either villages or police villages, such as will meet the needs of the case. There are, moreover, growing up in many centres, villages around mining companies and lumber camps, where much capital is invested and which are amply able, from the financial standpoint, to maintain a good health supervision of their districts. A thorough inspection of these should be made with a view to making suggestions as to water supply, an isolated building for the sick, and, where absent, arrangements for the regular attendance of a medical man.

Your Committee would, therefore, present the report for your consideration, trusting that some means will be discovered for adequately dealing with the important health interests of a district extending from Mattawa to Rat Portage.

Distribution of Antitoxine.—The following is a statement of the amount of antitoxine purchased and distributed by the Provincial Board of Health, from November 10th, 1894, to January 16th, 1895, as also of circular of instructions.

Statement of antitoxine purchased and distributed by the Provincial Board of Health of Ontario, from November 10th, 1894, to January 16th, 1895.

Dr.

To amount purchased		$440 00

Cr.

Amount sent hospitals, per experimental purposes	$ 85 00	
Amount sent physicians and local boards of health	340 00	
Amount on hand	15 00	
		$440 00

RECEIPTS.

Grant to hospitals (free)	$ 85 00
Received from physicians to date	137 00
Due from physicians to date	203 00
Amount on hand	15 00
	$440 00

With each bottle sent out, a blank form for a report, along with instructions, both of which are herewith appended, was sent. The bill for the same, hereto appended, was likewise forwarded. In order that the Board may understand the extent to which this work has gone on, the following statement is given:

Statement of letters, telegrams, express parcels, etc., from November 10th, 1894, to January 16th, 1895.

Letters *re* antitoxine		100
Telegrams, from November 20th to January 16:		
Received	30	
Sent	53	
		83
Expressage and brokerage on antitoxine		$15 00
Time of messenger packing and taking to express office 100 parcels containing from 1 to 10 bottles each.		
Trips to the customs		20

With such an amount sent out, both surprising and gratifying, to an extent unequalled, I believe, by any other state board on the continent, it might be fairly hoped and expected that the Board would have been in a position to report with much accuracy not only the value of the remedy but also of the particular supply obtained by the Board. It is with much regret, however, that your Secretary has to report the very limited number of reports sent in. A summary of them is presented herewith. Why a better showing cannot be given must, I believe, be accounted for.

1st. Because of the peculiarly harassing and irregular nature of the work of the practitioner in private practice, and the great difficulties in making sufficiently frequent visits for observation along with his other duties, and to a lack of systematic note-taking of cases.

2nd. To the fact that he is much more interested in getting a supply of the latest new remedy with which to score a success in treatment than in any special scientific interest in the principle underlying the action of the remedy. He has too frequently failed to realize the object of the Board in distributing the new remedy and has looked upon the office as a convenient depot at which to obtain a supply of a new drug. It is hardly necessary to remark that with such reasoning, let antitoxine, as a remedy, be ever so wonderful, it is doomed to more or less failure, owing to its improper use. How far it is the duty of the Board to continue to maintain a supply on hand, if such a view of it is to continue, is not for your Committee to decide. While on the one hand by enabling the Board to keep itself informed of the existence of outbreaks, which, under old conditions, it was not aware of, it has proved of great value, yet it may, it is feared, serve to divert the energies of physicians and health officers from the exercise of those preventive measures, which the Board has been endeavoring to inculcate in the past, and which, whether with antitoxine or without it, are the only sure means by which we can hope to finally eradicate the disease.

All of which is respectfully submitted,

C. W. COVERNTON,
PETER H. BRYCE,
Committee.

REPORT ON SMALLPOX IN ELGIN COUNTY.

February 22nd, 1895.

By C. A. Hodgetts, M. D., Medical Inspector.

P. H. Bryce, *Esq., M. D.,*
Secretary Provincial Board of Health.

Dear Sir,—I beg to submit the following report *re* smallpox in the Township of Malahide. As the history of the outbreak antedates my visit by some weeks, I referred to the minutes of the Local Board of Health for a brief account of what had been done up to February 6th, 1895. The first reported case of the disease was that of Mr. Percy, January 16th, although by the appended history it will be seen that there was at least one other case at an earlier date. The Board met January 7th, and issued proclamation in regard to compulsory vaccination and instructions as to isolation of persons exposed to the contagion, appointed sanitary police and sent Dr. Whyte to attend the case and Dr. Marlott to vaccinate the school children at Copenhagen, in the immediate vicinity of the infected house. Their doubts as to the character of the disease were to be settled by Dr. McCrimmon, St. Thomas. At the meeting held February 2, five (5) new cases were reported—Ashton and child, Mr. Saunders, Mrs. Jay and child—(these last two cases are subsequently referred to as being the first in the district). There were 19 families reported as quarantined. The Board at this date established a general quarantine over that district shown in the accompanying diagram, being 3¾ miles from north to south and 4 miles wide, police being appointed to guard the exits. Some difficulty having arisen regarding the doctor in attendance, Dr. McLay was at this date appointed to take charge of the cases, superseding Dr. Whyte.

Mr. McKenzie had spent February 5th in consultation with the Board and as a result more active work was taken in the important matter of vaccination, Dr. Kingston being sent to vaccinate in the quarantined households and Dr. Youll to begin house to house vaccination in the southern portion of the quarantined district.

At the meeting held February 6th I recommended another medical man be sent out to assist Dr. Youll, the work having been deferred too long, and there being 150 families in the district. Dr. Mann was at once appointed and sent. I urged upon the members of the town of Aylmer Board and the township Board that they secure a building which could be used in case of necessity, and went with a committee to look at one house, which proved unsuitable. They were successful, at a later date, in securing a house. A visit to the quarantined district, and call at each of the houses, gave me the following facts—see table and map, viz.:

List of Quarantined Houses.

No.	Name.	No. of house.	Date of exposure.	Where exposed.	Vaccinated.	Remarks.
1	Robbins	5	Jan. 28	Jay's.	V	
2	Welter	8	“ 29	“	V	
3	Lindsay	6	“ 28	“	V	All the members of the family exposed.
4	Jay	1			V	Only Mr. J. at house, wife and child at S. Ashton's.
5	Sinclair	5		Jay's	V	Not certain as to date, but about 10 days ago.
6	Van Slack, M.	4	Jan. 31	“	V	
7	Percy (wives and children)	7		Mr. Percy's, sr	V	The women and children had removed from Percy sr. on case being diagnosed.
8	Percy (husbands)	3	Feb. 1	Mrs. “ sr	V	Mrs. Percy was removed from this house Feb. 1.
9	Jones	10		Tyhurst.	V	
10	Corner	6		“	V	Susan C. had been vaccinated Jan. 18th, and had a vaccinia rash on forearms and legs.
11	Nicholls	2	Jan. 31	S. Ashton's.	V	
12	Warmacott, W	5	Feb. 1	“	V	
13	Ashton, M	5	Feb. 2	“	..	All the members of family exposed, vaccination not doing well.
14	Warmacott, T.	2	Jan. 31	Jay's.	V	
15	Ashton, W.	4	Jan. 30	St. Ashton's.	V	
16	Gillott	6	Feb. 2	Thro'Mrs. Dangerfield	..	Mrs. Dangerfield came direct here from Saunders.
17	Van Slack, A.	4	Feb. 2	“	V	Mrs. Dangerfield slept here Feb. 2nd.
18	Dangerfield	3	Feb. 2	Saunders'	V	Slept at Saunders' Feb. 1.
19*	Wylie	3	Jan. 30	Jay's	..	This family I did not visit; was not given name until after return.
20*	Lindsay, Rose.		Jan. 26	Jay's	V	Detained in Tshp of Bayham.
21*	Kipp		“ 26	“	V	“ “ Dereham.
22*	Elliott		“ 26	“	V	“ “ “

* Not shown in map. 1 to 18 shown on accompanying map.

Infected Houses.

		No. in house.	No. of cases.	Deaths.	Origin of disease.	Remarks.
1	Jay...	1	..	..	Tyhurst's	Mrs. J. and daughter were living at S. Ashton's, nursing.
2	Percy	3	2	2	Either from Tyhurst or Jay's.	Mr. Percy taken ill January 13th, died 27th. Mrs. Percy taken ill February 1st, died 10th.
3	Ashton, S..	6	4	..	Jay's	Mrs. J. and daughter included in this report.
4	Saunders..	5	1	..	Jay's	Taken ill February 2.

Twenty-one families were quarantined having been exposed in some way to the disease, three houses wherein the disease existed, and one house where the first cases had been. The details of all are shown in table.

At the time of my leaving the district, February 11th, there had been seven cases, with two deaths. Dr. McLay was in charge of the cases, and quarantine was being conducted most satisfactorily.

I again had a conference with the Local Board on February 8th and instructed them to have the cleaning of the houses done by their own medical health officers, and subsequently had a talk with Dr. Sinclair upon the subject.

Information having reached me of the exposure of three persons, Rose Lindsay, Corinth, township of Bayham; Mr. Kipp, township of Dereham; Mr. Elliott, township of Dereham, I sent telegrams to the medical health officers of these townships to detain and vaccinate the former. I subsequently visited, and found she had been vaccinated shortly after exposure and it was then fourteen days past. The other two I was unable to visit on account of the roads being blocked but have since learned they are well.

From the clerk of the Local Board of Health for Yarmouth I learned that about a year ago vaccination had been well done, but in view of the insidious course of the disease in the present outbreak, I recommended that the township be gone over again with a view to vaccinate those not done on the previous occasion.

Dr. Baker, medical health officer for South Dorchester, advised me that their Board would make vaccination compulsory at a meeting to be held February 12th.

The Secretary of the Bayham Board informed me that vaccination was made compulsory in that township.

These three townships are immediately adjoining Malahide, South Dorchester being the most remote from the quarantined district.

Considerable annoyance having been given to the people of Malahide by the fencing of the roads leading into Yarmouth by the authorities of the latter township, their substitution by responsible animate guards overcame the difficulty.

After careful enquiries I am of opinion that the disease was brought into the district by Tyhurst, who was in the same ward at the Amasa Wood Hospital, St. Thomas, on December 9th, 1894, as the case Stover, of that city. The patient, Stover, was brought into the ward early in the afternoon of that day and remained there until midnight, when he was removed to the smallpox hospital. The only other case in the ward has since died of the disease for which he had been under treatment. Tyhurst was not revaccinated, as he was convalescent of purpura hemorrhagica. He was not quarantined by the authorities as he should have been, and it is to be feared, judging by the consequences following his going to the Jay house, that disinfection had not been as thorough as it should. Tyhurst left the hospital on the 17th, left the city on the 18th, going direct to Jay's, where he remained until the 20th, returning on the 23rd and remaining over Christmas day. He subsequently went to Jones' (9), where he has been ever since.

Mrs. Jay was taken ill sometime early in January, 1895; the exact date I could not obtain from her husband. The symptoms, so far as could be asertained, point to an attack of smallpox of such a mild character that no medical man was called in. About two weeks after Mrs. J. was first taken ill, her daughter complained, and her illness followed a course similar to her mother's (she was vaccinated January 18th by Dr. Marlatt). Mr. Percy was taken ill January 13th and was the first reported case. Deceased contracted the disease either at Jay's or from Tyhurst, most probably the latter, as he met him when

Tyhurst was wearing his best suit of clothes, the same he wore at the hospital and at Jay's. This was at church, January 30th. Swartz, the Guelph case, also sat with him at church December 23rd, 1894. The mild character of the disease as it appeared at the Jay household, modified most probably by early vaccination, accounts for the large number of persons exposed, its character not even being suspected until Mr. Percy's case was diagnosed.

All of which is respectfully submitted,

CHAS. A. HODGETTS, M.D.,
Inspector.

REPORT ON DIPHTHERIA IN RENFREW.

FEBRUARY 1st, 1895.

By C. A. HODGETTS, M.D., MEDICAL INSPECTOR.

To P. H. Bryce, M.D., Secretary:

DEAR SIR,—Pursuant to instructions received from you January 22nd last, I have inspected the district in and around Whitney station the present terminus of the O. A. & P. S. R. where it had been reported that diphtheria was prevalent, so much so that it was likely to prevent the work being carried on in the lumber district.

Your inspector's enquiries began at the Egan Estate Depot of the Booth Lumber Co. where I learned from Mr. McKay, the agent, that in the eleven (11) camps under his supervision, where are employed some 300 men, no sickness of any kind existed. The greater number of these camps were, I found, in that section of country close to the house where the disease existed, the nearest being within three quarters of a mile, and if the disease had already been carried it would most probably have been to one or other of these camps. Instructions had been issued to all the camps of this company that men leaving would not be permitted to return, and transients were not allowed entrance. This wise precaution I recommended the agent to enforce so long as a case remained in the district. Investigations were next made in the direction of the McFarlane homestead some eight (8) miles from the depot; in that distance I found only four houses, the inmates being all well. There had been a family near by the infected house but all had already gone to Pembroke.

At Mr. McFarlane's I found the following ill with diphtheria:

(1) Mr. McFarlane	æt.	45	(4) Robert	æt.	14
(2) Mrs. McFarlane	"	40	(5) Margaret	"	12
(3) Sarah	"	16	(6) Mary	"	11

there had been two deaths.

(1) Harry Boyle æt. 22 January 19th.
(2) Annie McFarlane æt. 9 January 15th.

The other inmates of the house beside the family were: Isabella Payne, D. Sutherland, R. Campbell, J. McNeill. About a quarter mile distant were three persons who had removed early in the outbreak of the disease, viz., Mrs. Haggart æt. 75, Maggie Tumbleton æt. 18 and William McFarlane æt. 5; these three were well at the time of my visit.

A supply of medicines, a spray and disinfectants were left with the family. The only use made of antitoxin was in the case of the boy, William, 2 cc. as an immunizing dose and 5 cc. to Isabella Payne, 6 cc. to D. Sutherland. The last two were acting as nurses and were constantly breathing the polluted atmosphere of the filthy house. Their throats were slightly inflamed and I wished to immunize them if possible.

After an inspection of the premises I came to the conclusion that the only way to effectually clean the place would be to burn the house down after having built a new residence and removed the disinfected furniture, etc. into it. Mr. McFarlane willingly acquiesced, and has promised to act on the suggestion.

The appearence of diphtheria in the McFarlane house is another example of how laxity in the enforcement, by a local M. H. O., of the law regarding isolation and quarantine in the more densely populated districts, allows of this disease being carried often to a considerable distance, and when the contagion is carried to these new districts its spread is wide and its consequences very fatal for want of medical aid. In this case the patient, H. Boyle, had been visiting during the Christmas holidays in the neighborhood of Bangor, where Dr. Robertson informs me "sore throats" were prevalent. The day of his return, January 1st, Boyle complained of being ill, but the nature of the disease not being suspected, no precautions were taken, and indeed it is hard to tell what precautions can be observed in these log houses where the whole house is as one room—the result in the McFarlane family is given already.

Continuing my investigations on to Whitney with much difficulty, for the roads were blocked and the cold intense I found that there are no houses until the railroad is reached, and these are upon the property of the St. Anthony Lumber Co. The distance travelled is eight miles. At the office of the Company I saw Dr. Thompson. He informed me there was no sickness among the 150 men in their employ. Beside the cases at McFarlane's he only knew of two patients ill of scarlet fever at Long lake, some miles distant, which were proceeding to recovery. The doctor informed me he had been sent for to attend the cases of diphtheria but excused himself by saying he "had no medicine for the disease." However he sent a bottle of "iron and potash;" the family had to send some 60 miles for a physician, subsequently.

I left with Dr. Thompson a bottle of antitoxin and disinfectant to be used at the house at Long lake.

Two of the camps across the river were also visited, all the inmates were well, as were those at a camp a short distance from the company's property.

Before leaving the district I paid a second visit to the McFarlane family, and found all doing fairly well except the son, Robert.

The rest of my time was spent in visits to Maynooth, Combermere, Rockingham, Brudenell, Killaloe, Eganville, Mattawa, Renfrew and Ottawa.

At Maynooth I learned through Dr. Robertson that there had been but one death from diphtheria at Bancroft distant five miles, there were, however, an unusual number of cases of sore throat.

Combermere and school section five miles on the road to Maynooth, reported no infectious disease present. Mr. Miller, the secretary of the local board was absent from home when I visited the place.

At Rockingham there was nothing to report.

Mr. Whalen, Secretary, Brudenell Board of Health, informed me that he knew of no cases to report to you. The board here, since the appearance of diphtheria some two years ago, have kept a close watch on infectious diseases, care being taken to thoroughly clean up infected premises.

Dr. Reeves, Medical Health Officer, Killaloe, reported to me the following cases having been in the townships of Hagarty, Brudenell and South Algona since November 1st, 1894, the most recent case being on January 14th, 1895:

	Houses.	Cases.	Deaths.
Township Hagarty	4	10	5
" Brudenell	1	1	1
" South Algona	1	1	1
	6	12	7

My enquiries lead me to the opinion that the cleaning up of the houses in this district is left to the physician in attendance and but little attention is given to the matter by the local health authorities. As a consequence it is either imperfectly done or not done at all. The medical attendant would have to travel many miles to perform an act for which he would receive no remuneration; but for the like duty the medical health officer could legally receive pay and the local board would have the satisfaction of knowing that the work was done and the community protected.

If I might judge from the manner a funeral was about to be conducted at Eganville, the day of my arrival, it would appear that the local authorities are very remiss in their duties. A child had died the day before of scarlet fever, notification of the case had not been sent to the medical health officer until after death. A wake had been held the evening of its death, and a public funeral was to be held shortly after my arrival. This latter ceremony, however, I was in time to stop. As it was relatives had gathered from a distance, whom I ordered to be detained until clothing, etc., had been disinfected by the medical health officer. I found upon my return to the village some days subsequently, that other cases of the disease had occurred in the children attending the separate school. This, after a short conference with the representative of the board, it was decided to close, and Dr. Irwin, medical health officer, promised to have the inmates of the infected houses kept from mingling with others. The schoolhouse itself was also to receive a thorough cleansing during the recess. In justice to Dr. Irwin, medical health officer, I must say that he had only just been elected to the position and was ignorant of his duties. I found him most anxious to do all he could for the enforcement of the law.

I cannot but speak of the pleasure derived from my visit to Mattawa. The present satisfactory condition of health affairs has been born of much suffering, considerable loss of life and no small financial loss to the community. In the year 1894, the place was visited by diphtheria—79 cases with 29 deaths. Great trouble was experienced by the local board, and many sanitary police had to be engaged. Subsequently, in November, 1894, the present isolation hospital was erected, a building some 40x20 feet, built of tongued and grooved boards outside and in, with felt paper between. Attached is a cottage, consisting of two bedrooms and kitchen, also a fumigation chamber. The site chosen is quite isolated, yet convenient of access. The cases are under the care of the Grey nuns of Ottawa, who nurse at the Roman Catholic isolation hospital of that city. Since the opening of the hospital there have been seven cases, no deaths, facts which speak strongly for the advantages to be derived from isolation, prompt aid and proper nursing only to be obtained in an isolation hospital. Many places larger than Mattawa might easily follow the example set by this enterprising place. I left a bottle of antitoxin with Dr. James for the hospital.

Failure to make railroad connections gave me the opportunity to visit with Dr. Robillard, medical health officer of Ottawa, the two infectious hospitals of that city. The number of cases of diphtheria there is, I am pleased to report, on the decline, there being at the present time about the average number of cases.

I have omitted to refer to my visiting Renfrew, where it had been reported to me there were a number of fresh cases of diphtheria. This I learned from Dr. Gallager, medical health officer, to be incorrect. There have only been three cases since the annual report was sent in.

In summing up my report I would say that in most of the districts visited, there is a laxity in the enforcement of even ordinary precautionary measures on the part of the local health authorities. Notification is not as thorough as it should be. The infected houses are improperly quarantined—often from lack of knowledge on the part of the inmates as to its importance to the community. Funerals of persons dead of infectious diseases are frequently not private, and thorough cleaning of the houses either improperly done or not attended to. The causes are, I think, often due to the appointment of fresh local boards each year, with a change of medical health officer, and I am of opinion that some system giving more permanency to the board, or the medical health officer would overcome this difficulty. A board no sooner becomes acquainted with its duties and aware of its responsibilities than the return of an election leaves them out of office. Were it possible to retain even a portion of the board from year to year, then there would be some chance for better work being accomplished in the administration of our public health laws in such districts as I have inspected.

REPORT REGARDING THE NOTIFICATION OF TUBERCULOSIS.

To the Chairman and Members of the Provincial Board of Health of Ontario :

Gentlemen,—I take pleasure in recalling to your recollection the subject of tuberculosis presented to the Board at its last quarterly meeting in referring to the many favorable comments made by various persons in acknowledging the receipt of the printed report on Tuberculosis in Ontario.

With these acknowledgments have come an unanimous approval of the general measures suggested for dealing with the disease in cattle, and from veterinarians both in Canada and the United States, most valuable details have been suggested for putting in operation the measures indicated.

The question of the proposed measures for dealing with the disease in man has been during the past few years, and especially within the past few months very extensively discussed.

I have collated some of the published discussions and resolutions dealing with the question of placing tuberculosis on the list of contagious diseases, of which local health authorities should be notified. Of these probably the most important is the resolution adopted practically unanimously by the section of Hygiene, Climatology and Demography at the Pan-American Medical Congress, which met in Washington, in September, 1893. It is as follows :

> Resolved : "That it is the belief of the section on Hygiene, Climatology and Demography that owing to the facts : —1. That tuberculosis causes more deaths than any other disease —2. That it is now known to be communicable especially to persons living in houses and shops with consumptives.
>
> That the attention of the national, state and municipal authorities be directed to the necessity for controlling the dissemination of the disease, by :
>
> 1. Notification by physicians and householders.
> 2. Regulation of the residence of the tuberculized.
> 3. Controlling as far as necessary their movements.
> 4. Establishing hospitals and homes for the infected poor."

The following resolution has also been adopted and put in force in the State of Michigan.

Resolved: "That hereafter, consumption (and other diseases due to the bacillus tuberculosis) shall be included in the official list of 'Diseases dangerous to the public health,' referred to in sections 1675 and 1776 Howell's Statutes, requiring notice by householders and physicians to the local health officer as soon as such disease is recognized."

In Philadelphia the matter was discussed at length in a resolution presented by Dr. Flick, to the Philadelphia Medical Society; while a series of papers, found in the *Annual Transactions*, were read on the same topic before the New York Academy. A paper advocating compulsory notification has likewise been presented by Dr. Vacher, medical health officer of Liverpool, England, one of the foremost sanitarians of England, which paper became the occasion for an editorial in the *London Lancet*, of recent date.

In the Congress for the study of tuberculosis held in Paris, in 1891, positive opinions were set forth in a series of resolutions, urging amongst other things the disinfection of houses where have dwelt the sick or where persons have died of the disease. The Toronto Medical Society also adopted a resolution expressing the conviction that isolation of the disease is necessary.

Copy of proposed Order-in-Council re *Tuberculosis or Consumption, approved by the Provincial Board, Oct. 18, 1894, and forwarded to the Government for approval.*

(Sec. 13, sub-sec. 8, R.S.O. 1887.)

Whereas, the Province of Ontario appears to be threatened with tuberculosis, an endemic disease, the Provincial Board of Health, subject to the approval of the Lieutenant-Governor-in-Council, issues the following regulations which are deemed necessary for the prevention and mitigation of the said disease.

1. The local board of health of every municipality shall cause to be kept a register containing the name, address, sex, age, occupation and place of employment of every person known to be suffering from tuberculosis or consumption, and all physicians and householders shall notify the medical health officer or the secretary of the local board of health of any cases of tuberculosis or consumption within their charge.

2. No visits to the premises where such patients reside will be made, nor will there be any surveillance of them by the local board, except where the patient lives in a hotel, boarding-house or tenement house where several families reside, unless the householder or attending physician requests that an inspection of the premises be made. In those cases where patients reside in hotels, boarding-houses, or tenement as aforesaid, the local board will not visit the premises to make such inspection if requested by the attending physician not to do so, and if said physician is willing himself to deliver circulars of instructions and to take measures intended to prevent the communication of the disease to others.

3. Whenever the medical health officer or the local board of health learn of the existence of a case of tuberculosis or consumption in any hotel, boarding-house or tenement, not dealt with as aforesaid, they shall inspect the premises and supply the patient and his family with circulars of information regarding measures to be taken to guard against the spread of the disease. Where necessary the board or medical health officer shall direct the cleansing of apartments with a view to destroying therein existing contagion.

4. In work-rooms, factories, etc., where tuberculous persons are employed, and where owing to the nature of the work or the number of persons engaged there is danger of the dissemination of the infection, the medical health officer or local board of health shall deal with the matter in such a way as will best protect the employees.

5. In all cases where the medical health officer or local board of health learn that in any hotel, boarding-house or a tenement house, a room has been vacated by a tuberculous patient, either through death or removal, they shall direct the disinfection of the apartments and of all articles liable to contain infection, according to the rules in pamphlet No. 1, 1893, published by the Provincial Board of Health for checking contagious diseases, and shall prevent further residence in such rooms until satisfied that such disinfection has been carried out.

6. The authorities of all public institutions whether municipal or provincial, such as hospitals, dispensaries, asylums, prisons, homes, etc., are required to notify within seven days the local board of health of the municipality, of name, sex, age, occupation and last address of every tuberculous person resident or under treatment by them in any such institution.

7. Every institution receiving either municipal or government aid shall provide separate apartments wherein consumptive patients shall be maintained.

It is therefore, manifest, that the question of what can be done by public health authorities to the end of limiting the prevalence of this disease has now taken a position of such great prominence that it does not seem possible for this Board to longer delay considering what practical instructions can, under the Public Health Act, be given to local boards of health and their officers for beginning the struggle which, under the most favorable conditions, will prove long and obstinate and unfortunately but partially successful so long as the social conditions of the present day exist.

But when the work of twelve years of public health work in Ontario is recalled, when it is remembered that it is but the same short period since Dr. Robert Koch published his discovery of the germ of the disease, that many municipal governments and even some state governments have undertaken executive measures for lessening the disease in cattle; and that philanthropists and economists are now studying the question of ameliorating the conditions specially favorable to the propagation of tuberculosis in man, it does not seem illusory to believe that as with leprosy, cholera and even smallpox, public health efforts will gradually be able to exercise so dominant an influence over the disease that even within the next ten years the power of the disease will be broken through measures various in character, but all marked by the one effect that of rendering innocuous the infection from the sick, whether in house or in the workshop, or in public conveyances. I therefore recommend that the Board do go into committee to consider the subject of this report.

I have the honor to be,
Your obedient servant,

PETER H. BRYCE,
Secretary.

TORONTO, May 3rd, 1894.

REPORT ON A HOME FOR CONSUMPTIVES.

To the Chairman and Members of the Provincial Board of Health :

GENTLEMEN,—Your Committee has for several years reported on the problem of how to lessen the great death-rate from tuberculosis in Ontario, and presented at the last quarterly meeting proposed regulations for placing tuberculosis on the list of notificable diseases.

The more, however, that the problem is studied, the greater the urgency seems to be for the establishment, as a corollary to such compulsory notification, of a home for consumptives on some inland and elevated tract of warm and dry soil protected by an evergreen forest growth, and conducted under conditions which have been found most successful wherever such sanitaria have been established.

It would further seem to your Committee that such provision can only be realized in the near future by its establishment being undertaken by the Government; and that thereafter, when it has gained public recognition, the counties might be encouraged to establish in favorable localities similar homes, modelled on that erected by the Government.

Such a home would necessarily be something between an hospital and a sanitarium. the maintenance of which might be in considerable part provided for by the products of agricultural, horticultural and other industries carried on thereat, and by the moneys received from pay patients of the better class

The arguments for the establishment of such an institution may be briefly summed up as follows:

1. That according to the Hospital Report for 1892, one patient of every twenty amongst the 11,008 inmates of the general hospitals of the province were tuberculous; while almost as many more, or 4.5 per cent. suffered from acute bronchitis or pneumonia, a considerable proportion of whom, according to medical experience, are likely to have subsequently developed consumption.

2. That the amount of Government aid to the hospitals in 1892 for the maintenance of this number of 1,197 patients was at the rate of say 30 cents per diem, $359.10, which if the number were maintained for the whole year would have amounted to $181,071 50.

3. That the general hospitals in the different cities of the province have not in any single instance, as far as I am aware, any method, as by separate wards, for preventing these consumptives (one in every twenty) from mingling with patients suffering from acute and exhausting diseases, which render them especially liable to inoculation with tuberculosis.

4. That with 750 deaths in the twelve cities of the province during 1892 from tuberculosis and probably as many more persons suffering from the disease, there was as a result a notable danger of such persons spreading the disease not only within their own families, but also amongst their fellow-workmen and workwomen so long as they were able to perform labor, forced upon them by their limited means.

Other arguments put in a more general way have been presented in the report on tuberculosis prepared by your Secretary and published by the Board last year, as well as in articles read before the Association of Executive Health Officers in August last and published in its report.

Proposals to establish an hospital for consumptives in Toronto, have, as you are aware, been made, but so far the idea has taken no definite shape.

However valuable such an institution if established will become, it cannot as an hospital, fulfil the conditions which must recommend themselves to your Committee. As is well known the lakeside cities and even rural municipalities bordering on our great lakes, have an incidence of deaths from consumption notably greater than the inland and more elevated counties. The following table, published before in previous papers, may be repeated, and year after year may be illustrated:

Deaths from Tuberculosis in Cities in 1891, 1892, 1893, in Ontario.

Cities.	1891, ratio per 1,000 of popu.	1892, ratio per 1,000 of popu.	1893, ratio per 1,000 of popu.
Toronto	2.4	2.5	2.6
Windsor	2.7	1.2	1.6
Kingston	2.2	2.1	1.8
Hamilton	1.8	1.5	1.7
Brantford	1.7	2.0	2.4
London	1.6	1.3	1.3
Belleville	1.4	2.9	1.7
St. Thomas	1.4	1.2	.9
St. Catharines	1.3	2.9	1.9
Ottawa	1.2	1.8	2.4
Guelph	.9	1.5	2.1
Stratford	.8	.9	1.1

It seems, therefore, apparent that the location of such a home of a provincial character must be chosen with a view to the very best location from the climatic and geological standpoint.

It has been stated elsewhere, that basing the calculation on the annual death-rate, probably a number approaching 5,000 consumptives are at any one time living within the province. If it were assumed that even a number equal to those treated at present in hospitals for tuberculosis and other pulmonary complaints were provided for gradually, it would mean an institution not larger than one of the provincial institutions for the insane at the present time.

Without going further, however, into the question, your Committee believes the time has arrived when the demand for such an institution is general.

It commends itself to the inspectors of the Department of Public Institutions both from the public health and economic standpoints, and your Committee would therefore recommend the adoption of the report with instructions to have it forwarded to the proper authorities for consideration.

This is all the more urgent in view of the fact that your Committee has not been informed of the making of the Order in Council *re* compulsory notification of consumption; while your Committee may further state that the point was raised in the discussion of the regulations with the Government, that if the consumptives were prevented from engaging in employment in workrooms and factories, where mingling with others was necessary, some other disposition of them would be necessary, and in the absence of such an institution what could be done ?

All of whi h is respectfully submitted.

C. W. COVERNTON, M.D.,
P. H. BRYCE, M.D.,
Committee.

TORONTO, January 17th, 1895.

THE ANTITOXIN TREATMENT OF DIPHTHERIA.

By J. J. CASSIDY. M.D.,

GENTLEMEN,—In view of the fact, that there has been, for many years, a large mortality from diphtheria in Ontario, and that this Board is frequently appealed to by municipal health authorities to apply the latest remedies of science to its prevention, it is very satisfactory to find, that a new remedy has begun to dawn on the medical horizon, which promises to be not only a prophylactic, in the sense of securing immunity from diphtheria, but also curative after the attack has begun. This remedy is an antitoxin, or antidote, prepared from cultivations of the diphtheria bacillus.

With regard to the extent and ravages of diphtheria in this Province, it is indeed pleasing to know, that, according to the report of the Registrar-General for 1892, the deaths in that year were less than in 1891, viz., 890 in 1892, and 952 in 1891. From a perusal of the report of the Medical Health Officer of Toronto, for 1893, I observe, that fewer cases are reported in Toronto than formerly. For instance, during a period of one year, ranging from May 1st, 1891, to April 30th, 1892, 1,566 cases of diphtheria were reported in Toronto, whilst during a similar period, ranging from May 1st, 1892, to April 30th, 1893, 1,339 cases were reported, showing a reduction of 227 cases in one year.

To the public generally, and sanitarians in particular, these are gratifying indications that methods of quarantine, isolation and disinfection, such as have been recommended by this Board, have, when intelligently and zealously carried out in practice, a powerfully restraining influence on the spread of diphtheria. But this is not enough. The brilliant cures, which have been obtained by practitioners in Germany, France and England, who have used antitoxin in treating their cases of diphtheria, make us feel anxious to imitate them, and we now confidently look forward to therapeutic results in the treatment of this disease, quite different to any with which we are, so far, acquainted.

In the Section of Bacteriology of the International Congress of Hygiene, which met last month at Buda-Pesth, Dr. Roux, of Paris, read a very valuable paper on the prophylaxis and treatment of diphtheria. I shall now endeavour to present his views on the principles of serum-therapy.

Referring to the clinical side of the question, Dr. Roux proceeded to state, that, on the 1st of February, 1894, he began the serum treatment, in the diphtheria pavilion of the Sick Children's Hospital, Paris. This was the only new feature of the treatment adopted, the nursing of the patients and the local treatment, (glycerine and salicylic acid, lotions of boric acid, etc.), being continued as before. Each day, at his visit to the pavilion, he treated all the children there, no matter what their condition might be, so that the rough general result of each month's treatment may be compared with those of similar months in preceding years. There is also another hospital for sick children at Paris, the Trousseau Hospital, at which serum is not used, with which comparisons may be made.

The percentages of mortality from diphtheria in preceding years were:

1890	55.88
1891	52.55
1892	47.64
1893	48.47
Mean mortality	51.71

From February 1st to July 24th, the serum treatment was applied. Out of 448 children admitted to the pavilion, for diphtheria, there were 109 deaths, showing a mortality of about 24.5 per cent. During the same months of March, April, May and June, 1894, 520 children were treated for diphtheria at the Trousseau Hospital, without serum, and 316 died, showing a mortality of 60 per cent. It will thus be seen, that the epidemic of this year in Paris was severe.

Dr. Roux distinguishes between cases of angina and tracheotomized croup, of which the latter are much more grave. At his hospital the angina cases in 1890, 1891, 1892 and 1893 gave a mean mortality of 33.94 per cent. From February to July, 1894, the mortality was 12 per cent. During the same period at the Trousseau, without serum treatment, it was 32 per cent. The croup patients, who were operated upon, used to give a mean mortality of 73.19 per cent. From February to July the total mortality of that class was 46.2 per cent. During the same period at the Trousseau, without serum treatment, it was 86 per cent.

Dr. Roux remarked, that about one-fourth of the children treated at the diphtheria pavilion, did not have real diphtheria, although they had sore throats, and sometimes even croup. From the 448 total patients, 128 patients of this class must be deducted leaving 320, and of these, twenty succumbed shortly after reaching the hospital, and received no serum. Dr. Roux's statistical report, therefore, applies to 300 patients with diphtheria, all treated with serum; of these seventy-eight died, giving a mortality of 26 per cent. The previous work, done by Messrs. Roux and Yersin, and by Messrs. Martin and Chaillou, in the same hospital, had demonstrated, that the mortality of children attacked with true diphtheria, as shown by bacteriological examination, was 50 per cent.

All the patients received systematically, a hypodermic injection of 20 cc. of serum, at one dose, administered under the skin of the flank. If the bacteriological examination showed, that the patients did not have diphtheria, the injection was not repeated. One hundred and twenty-eight patients of this class remained, a few days, in the pavilion, exposed to the contagion of diphtheria. The fact, that they did not develop diphtheria, speaks well for the prophylactic value of the serum. Twenty-four hours after the first injection, the diphtheria patients received a second one of from 10 to 20 cc., which in general sufficed to effect a cure. "The pulse and temperature were our guides," says Dr. Roux; "if the latter remained high, we repeated the injection. The minimum quantity of serum used in the treatment of a diphtheria case was 20 cc., and the maximum 125 cc. In a really exceptional case, we injected 205 cc., in thirty days. The children, generally, received more than a thousandth part of their weight of serum, and, in some exceptional cases, about a hundredth part. During convalescence, some days after the injection of serum, eruptions on the skin resembling urticaria make their appearance. These eruptions, which are not accompanied by fever, are due to the serum. Side by side, however, with these are other eruptions, accompanied by fever. The latter are particularly marked in diphtheria, associated with other disorders, and, in my opinion, ought to be classed with the infectious erythemas, which frequently occur after angina.

"Sequels rarely appear in patients treated with serum. We have had a few cases of paralysis of the velum palati of short duration, one case of paralysis of the leg, and another of generalized paralysis in a child of nine years, brought in on the sixth day of the disease, with angina, jactitation, and pallor of the face. The paralysis developed three weeks after convalescence had begun, and the patient choked, while eating a biscuit, some pieces of which found their way into the trachea. Three children died of syncope, one less than twenty-four, and the other less than twenty-six hours after their entry. The third one, who had had measles, died a few days after treatment was begun."

Dr. Roux afterwards describes the modifications effected, by the serum, in the course of the disease, treating of angina and croup separately.

"(*a*) Pure anginas. These are cases of angina, in which the false membrane, taken from the throat of the patient and sowed on coagulated serum, gives diphtheritic colonies, and few or no other foreign colonies. The quantities of antitoxin injected varied from 20 to 85 cc.

"The general condition of the children, treated with serum, changed rapidly for the better, unless brought in at a very advanced stage of the disease. Most of the patients, receiving the serum treatment, look very differently from patients, who do not receive it. We scarcely ever see in our wards pale, livid faces ; quite on the contrary most of the faces of the patients are rosy in hue, and their attitudes are expressive of life and gaiety. Appetite returns soon and loss of flesh is not very noticeable. The duration of the detention in the hospital is notably diminished. The effect of the serum on the local lesion is most striking. The false membranes stop growing twenty-four hours after the first injection ; they become detached in general in from thirty-six to forty-eight hours, at the latest on the third day. The diphtheritic bacillus disappears from the throat at the same time, sowings refusing to give colonies (with a few exceptions) from the third to the fifth day. The glands of the neck are always swollen, but the surrounding cellular tissue is never thickened. The glands remain appreciable to the touch a long time. The temperature falls promptly in the milder anginas, the fall takes place on the next day after the first injection, and it is rarely delayed longer than the second day. The defervescence is quite sudden, and on the temperature charts is marked by a descending vertical line, just as if the disease had stopped all at once by crisis. A first injection of serum will not, however, lower the temperature in severe anginas ; in them defervescence begins after the second or third dose and occurs in the form of lysis. As long as the temperature is above 100 2-5, the cure cannot be considered complete, and it is prudent to hasten the descent of the febrile temperature to the normal, by a supplementary injection of the serum.

"The pulse beats about 120 times a minute in severe cases. The serum acts on the pulse more slowly than on the temperature, and the pulse continues frequent for two or three days after the temperature has fallen. The pulse never becomes normal before the temperature. Since beginning the use of serum, we no longer observe, during convalescence, those irregularities of the pulse, which were formerly the rule. At the beginning of diphtheria the respiration is not modified except in very young children, in whom it is accelerated; fifty-six of our patients had laryngeal troubles which made us apprehensive of croup; thirty-one had hoarse cough; twenty-five in addition had aphonia and difficult inspiration. Many of them escaped tracheotomy owing to the use of serum.

"Messrs. Martin and Chaillou found that only a third of the children attacked with diphtheria escaped albuminuria; two-thirds of the number had it sooner or later. Of 120 children treated with serum, fifty-four did not have albuminuria; twelve had it for a single day; fifty-four had albuminous urine.

"Complications. Eight children had nasal diphtheria with jactitation. They had entered at a late period of the disease; two died.

"Measles accompanied diphtheritic angina in eight cases. Of these, one died. A child of five years had, at home, measles and broncho-pneumonia. He entered the hospital with scarlatina and diphtheritic sore-throat. He recovered in spite of all these diseases coming on one after another.

"Diphtheria was complicated with scarlatina in five patients, of whom all recovered.

"Mortality. Messrs. Martin and Chaillou, out of 120 patients with pure diphtheria, had nine deaths, or a mortality of 7.50 per cent. Of the nine who died, seven had been less than twenty-four hours at the hospital. They can scarcely be counted as failures, as they only lived a few hours after the injection. If they are deducted, the figures would be: 113 anginas, two deaths, 1.7 per cent. mortality. One of the patients, who died in spite of the serum, was brought in on the fourth day of the disease, with a livid countenance, jactitation, nose-bleed, hæmorrhage from the conjunctiva and purpura. He remained six days in the ward, got 70 cc. of serum, and expired after a fall of temperature and a sudden drop of the pulse from 170 to 80.

At the autopsy we found tubercular peritonitis, amyloid degeneration of the kidneys and liver, Pott's disease, with an abscess on the sheath of the left psoas muscle. The lungs were sound. The other child had a benign angina. On the second day after his entry, measles appeared, and his temperature kept up to 102⅕-104°. On the eight day, an abscess formed in the neck, which sloughed. The child died with nose-bleed, hæmorrhagic diarrhœa and broncho-pneumonia. From what precedes, therefore, we think we are justified in concluding, that every pure diphtheritic angina can be cured if treated in time."

"(*b*) Associated anginas. These are recognized when the sowings of false membranes on coagulated serum give, along with the specific bacillus, numerous colonies of other bacteria. The principal kinds are associations of diphtheria with micrococci, staphylococci, and streptococci.

"1. Association with the micrococcus, nine patients, no deaths. The association of this coccus with diphtheria is always benign. The serum was injected in doses ranging from 20 to 40 cc.; once only we gave 60 cc. Six times the little patients had hoarse cough, with difficult respiration, for the anginas in which this coccus is present tend to extend to the larynx.

"Albuminuria was noticed twice. As complications, we noted a measles, which appeared the sixteenth day after the patient arrived at the hospital, and two scarlatina-like eruptions, without fever, appearing during convalescence."

"2. Association with the staphylococcus pyogenes: These anginas are severer than the preceding ones. We had five patients, all of whom recovered. This form of diphtheria lasted longer than the pure anginas; the quantities of serum employed ranged from 30 to 50 cc. The temperature in these cases was always high ; three times it exceeded 103 1-5 ; the serum caused a rapid fall. The pulse, which at first is very frequent, soon drops to the ordinary figure. When the staphylococcus is present in diphtheritic false membranes, respiratory troubles, with a tendency to broncho-pneumonia, are common. In our patients these all cleared up. Three children had hoarse cough ; two, difficult respiration. Albumen was noticed in four cases out of five. As complications, we noticed a scarlatina concomitant with diphtheria, and a rebellious rhinitis, which took one month to cure.

" 3. Association with the streptococcus. These cases are the gravest of all. We treated thirty-five patients of this class with serum, and had twelve deaths, a mortality of 34.2 per cent. Four children died in less than twenty-four hours after entering the hospital. Deducting these, there remain thirty-one cases, with eight deaths, a mortality of 25.8 per cent. In diphtherias complicated with the streptococcus, larger doses of serum must be given, particularly at the beginning, and the injections should be prolonged ; the quantities used vary from 20 to 75 cc.

" The duration of the disease is longer ; the children who recover remain at least fifteen days at the hospital. By using the serum, the general symptoms, which are always grave in these cases, have been notably improved—the pallor of the face was less frequent and less marked.

" The false membranes separate more easily. The glands cease to enlarge if the injections are sufficient. In nine cases the glands were thickened and of enormous size. The temperature is high ; twenty-six times above $102\frac{1}{5}$, nine times above 100 2-5. The serum did not produce the rapid fall we had noticed in cases of the other classes ; rapid defervescences were rare—only three cases. The temperature fell by lysis. The pulse ranged from 120 to 140 per minute. During the first two days of treatment, if the disease is going to terminate favourably, the pulse drops to 120, and keeps at that rate a good while.

" Albuminuria was noticed in eighteen cases ; it was absent in seven others, and could not be proved to be present in ten children, who were so young, that their urine could not be obtained.

" Respiration was rapid (over 40) in severe cases ; in two patients in whom it exceeded 50 per minute we feared broncho-pneumonia.

" Among the complications were marked : Anasarca, once ; jactitation, five times ; suppurative adenitis, twice ; conjunctivitis, twice ; polymorphous skin eruptions, four times ; measles, seven times, and scarlatina, twice. Ten autopsies were made. We found broncho-pneumonia, four times ; pseudo-membranous bronchitis, once ; multiple suppurations, consecutive to scarlatina, once ; generalized infection, with streptococci in the spleen, once. In two cases death resulted in less than twenty-four hours from infectious angina, and in one case there was sudden death.

" Summary : Out of 169 diphtheritic anginas treated by serum there was a mortality of 21, or 12.4 per cent.

		Deaths.	Mortality.	
Pure diphtheritic anginas........................	120	9	7-5	per cent.
Deduction made for seven children who remained less than twenty-four hours in the hospital..... ..	113	2	1.7	"
Associated anginas..................................	49	12	24.5	"
Deduction made for four children who remained less than twenty-four hours in the hospital..	45	8	17.7	"
Anginas associated with micrococci..................	9	..	..	
" " staphylococci.............	5	..	..	
" " streptococci................	35	12	34.2	"
Deduction made for four children who remained less than twenty-four hours in the hospital........	31	8	25.8	"

These statistics are particularly valuable, as Dr. Roux has been careful to avoid the error of confounding real diphtheria with simple pharyngitis. This was done by microscopically examining false membrance from the throat of each patient for diphtheria bacilli immediately after admission to the hospital. When membranes were absent, a culture from the throat of such a patient was sowed in coagulated blood serum, placed in an oven heated to 98 3-5° F., and examined for diphtheria bacilli in twenty-four hours. Out of 448 patients, 128 were proved to be non-diphtheritic. They, however, received the serum treatment like the others, and, as a proof of its preventive value, they did not contract true diphtheria, though certainly exposed to the contagion. Of the other 320 patients, twenty succumbed before the serum treatment was begun. Dr. Roux's statistics, therefore, apply to 300 cases of diphtheria treated by serum: Total patients, 300; deaths, 78; mortality, 26 per cent.—divided into two categories, pure diphtheritic anginas, and cases of diphtheritic croup. Diphtheritic angina without laryngitis: Patients, 169; deaths, 21; mortality, 12.4 per cent. Eliminating eleven deaths occurring in patients who were less than twenty-four hours in the hospital, the statistics would be: Patients, 158; deaths, 10; mortality, 6.32 pecent. Patients with diphtheritic croup not operated on, 10; deaths, 1; mortality, 10 per cent. Tracheotomized cases of croup, 121; deaths, 56; mortality, 46.2 per cent.

Dr. Louis Fischer, of New York, writing in the October 6th number of the *New York Medical Record,* describes Aronson's serum as "a clear, colourless liquid of thick consistence, quite sticky and with a slight carbolic odor." In order to preserve it, it is mixed with 0.2% trikresol as some of the organic matter might otherwise decompose. It is known in Germany as "Aronson Heil serum." Another preparation is sold under the name of "Behring Ehrlich Heil serum." It is injected between the scapulæ or into the tissue of the leg or arm with a clean hypodermic syringe.

In an original article appearing in the October 6th number of the *New York Medical Record,* Dr. Baginsky, Professor of Pediatrics, University of Berlin, says: "Behring is credited with giving us a new remedy for diphtheria." In an elaborate book published by Behring, he details the subject and treats of it exhaustively. Behring uses the blood serum of animals immune against diphtheria as a specific remedy for the treatment of diphtheria or for the prophylaxis of cases which have been exposed to diphtheritic infection. Associated with Behring have been Ehrlich, Wassermann, Wernicke and a great many others. Hans Aronson has followed the directions of Behring and has made a serum which appears to be equally as good, if not better than that made by Behring."

Dr. Baginsky considers that Behring's system of blood-serum therapeutics is one of the greatest triumphs in the annals of medicine.

Dr. Roux prepares his own serum at the Pasteur Institute, Paris. He first sows diphtheritic bacilli in alkaline peptonized bouillon, which is exposed in flat pans to the action of damp air, but kept at a temperature of 98 3-5. After three or four weeks the culture is rich enough in toxine to be used. It is then filtered and kept in darkness in well-filled vessels at the ordinary temperature. An injection of 1 to 10 cc. of this toxine kills a guinea-pig of 500 grammes weight in forty-eight hours. Dr. Roux prefers to immunize the horse, which is more indifferent to diphtheria than the sheep or goat. He selects cab-horses, sound in the internal parts such as the liver and kidneys, but unfit for active work owing to damaged legs or hoofs. During eighty days one of these horses received, from day to day, quantities of toxine, aggregating in all over 800 cc., without being injured. On the eighty-seventh day, he was bled in the jugular vein with a cannula and trocar, a considerable quantity of blood being removed and a further dose of 200 cc. of toxine introduced into the vein through the cannula. The serum collected from his blood had a preventive value of over 50,000; this means, that a guinea-pig resists a hypodermic injection of $\frac{1}{2}$ cc. of fresh, virulent diphtheria culture, if twelve hours previously a quantity of this antitoxin, equal to the fifty-thousandth part of its own weight, has been injected. The serum of a horse's blood separates from its other constituents with great clearness. This serum taken from the blood of the horse is the immunizing agent employed by Dr. Roux.

In order to enable this Board to assist in placing so meritorious a discovery, within the reach of the Ontario profession, I would suggest that a committee, consisting of Drs. Covernton, Cassidy and Bryce, be appointed to consider the matter ; and that they be empowered to purchase a limited amount of serum, the same to be distributed to the diphtheria hospitals in the province, and to physicians, who may desire to use the same in their practice.

PRACTICAL DIFFICULTIES OF MEDICAL HEALTH OFFICERS AND PHYSICIANS IN DEALING WITH SUSPECTED CASES OF DIPHTHERIA.*

By P. H. Bryce, M.A., M.D.

Gentlemen of the Association,—It is well within the recollection of most whom I address that it is not more than ten years since scientific investigation gave us any actual idea of the immediate cause of the disease known as diphtheria. At that time even its contagiousness was disputed by many ; and while medical practitioners having experience with the disease had noted its special incidence in certain localities and still more in certain dwellings, yet the cause was by most supposed to be due to local unsanitary conditions wherein the decomposition of organic matter, whether animal or vegetable, in cellars, sewers, etc., was supposed to exert a causative influence. While to-day, such conditions are readily acknowledged to exert influences favorable to the occurrence of the disease, yet actual observers of this as of other zymotic diseases give such influences the secondary place, and speak of them as exciting causes rather than as the immediate cause.

The part which the presence of decomposing organic matters plays in the dissemination of the disease must not, however, in my opinion, be for a moment lost sight of, as otherwise the working sanitarian, *i.e.*, the executive health officer, will often be robbed of an argument of the greatest value in his efforts to suppress outbreaks of the disease, or to supply a fairly satisfactory explanation of the occurrence of so-called sporadic cases.

Before discussing further, however, the importance of decomposing organic matter in favoring outbreaks of diphtheria, it will be well for us to make some observations on what we call the immediate cause of the disease. Within the two or three years after the announcement by Loeffler of his discovery of the bacillus which he asserted to be the true cause of diphtheria, pathologists in many laboratories published the results of their researches made along the lines laid down by him and many asserted with equal positiveness that Loeffler's bacillus while certainly present in many cases of diphtheria was yet by no means necessary to the appearance of the disease, *i.e.*, of a diphtherial exudat on the mucous membrane of the pharynx. I need only recall on this point the work of Professor Prudden, of the College of Physicians of New York, on the streptococcus of diphtheria.

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* A Paper read before the American Public Health Association at Montreal, September, 1894.

Without dwelling further on the results of other investigators it need only be said that with the multiplied labors of many bacteriologists we now know that the mucous membranes of the mouth and air passages having air to the amount of over 11 cubic metres in twenty-four hours passing over them must necessarily become the receptacle of all floating particles existing in this volume of the atmosphere.

When it is further remembered that microbes, according to various experimenters, will not rise from moist surfaces and that air expelled from the throat through a sterilized tube is incapable of inoculating a culture medium of beef broth it is apparent that the mouth with its mucous membranes maintained at a temperature of 38.4C. must act very similarly to a culture medium in which microbes from dust, whether in air or on food, begin the struggle for existence; those forms finally triumphing which find the environment most completely in harmony with individual peculiarities and local conditions.

To illustrate in some degree this point the following figures may be given:

Air respired by an average man in 24 hours 11.05 cubic metres.

Average number of microbes in one cubic metre of air of Paris, France, in 1884	3,480
In centre of Paris, 1893	3,040
In new park of Montsouris in 1884	480
In park clothed with turf and trees, 1893	275
In ward in Hotel Dieu	3,250
In air of Paris sewers	4,070

In this connection it may be mentioned that Miquel has found that while in winter the external air of Paris contained moulds to bacteria in proportions of about 6 to 1, yet the ratio in the air of Hotel Dieu was, moulds 1 to 20 bacteria.

Von Bessar found on the nasal mucous membrane in 81 cases :

Diplococcus pneumoniæ	14 times
Staphylococcus pyocyaneus	14 "
Streptococcus pyogenes	7 "
Bacillus Friedlanderi	2 "

Black in 10 healthy persons found :

Staphyococcus pyocyaneus	7 times
Staphyococcus pyoalbus	4 "
Streptococcus pyogenes	3 "

This table, necessarily very incomplete, is enough to illustrate the important point, that both in theory and by observation the transference from the dust of streets and still more of habitations of numberless living forms is constantly going on, and that therefore it need cause no surprise if every form capable of overcoming the protective influences present in the respiratory mucous membrane should from time to time and in different climates, localities, and under different conditions make their presence in the system recognized, owing to the exudative processes resulting in the formation of a so-called diphtheritic membrane

Without referring further to these influences promoting diphtherial exudations, I propose for the purposes of my paper, to refer to the results of the most recent experimental work on the subject of the diagnosis of true diphtheria, in order that the difficulties experienced in dealing with the disease, may be made apparent.

I refer especially to the bacteriological and clinical observations made by M. M. Chaillou and Martin, *internes* of Hôpital des Enfants, Paris, carried on under the direction of Dr. J. Simon of the Hospital and Dr. Roux, of L'Institut Pasteur.

Referring to the varieties of microbes found in diphtherial membranes it may be said that the work of Yersin and Roux published in 1891, indicated with great clearness the importance of the bacteriological examination of diphtheritic membrane in the case of all patients brought to diphtherial hospitals, before their admittance to the wards, from the fear that such patients if not affected with the Loeffler bacillus would in the wards be exposed to the contagion.

Since that time attempts more or less systematic, have been made, to give practical direction to such examinations by urging the measure in private practice. This, however from causes manifest to all, has been possible only under exceptional circumstances, and everywhere practitioners proceed in the old way of diagnosis by merely clinical signs and symptoms; although, as M. M. Chaillou and Martin state in the outset of their paper, published in the July number of the Annales dé L'Institut Pasteur: *"Les nombreux savants qui ont ecrit dans ces derniers temps sur le diagnostic de la diphterie s' accordent a reconnaitre que dans les angines blanches, seul l'examen bacteriologique peut fournir un diagnostic certain."*

In the complete supervision and study of 200 cases as internes of the hospital (Hôpital des Enfants) they have been able to say that the bacterial diagnosis being made it was then possible with a systematic observation of the clinical signs, as of the adenopathies, albuminuria, temperature, pulse, and respiration to make very accurate prognoses.

From what has already been stated with regard to the dissemination of microbes we shall be prepared for the following results of their work on those points we are at present specially concerned with.

Their examinations included 198 cases in all: anginas or throat invasions 99, croups or laryngeal 99. Of the anginas they established three divisions.

Anginas, non-diphtheritic, 29; deaths, none.

Anginas, purely diphtheritic, 44; deaths, 10.

Anginas, diphtheritic, with associated forms, 26; deaths, 18. Thus more than one-fourth of the sore throats were not true diphtheria. It is explained that this work being done in the hospitals in winter, the number of throats with non-diphtheritic exudation is less than in summer as shown by previous experiments. These non-diphtheritic cases consist principally of coccus forms (single or a diplococcus, but not in chains), some disappearing in two or three days, but in half the cases some membrane, mostly of white points, continued for six days and over. In some of the cases the membrane appeared in the nose or the larynx —in one case necessitating tracheotomy. Essentially, these membranes seem more creamy, less adherent and less elastic; but it is practically impossible by the eye to distinguish these from the milder cases of diphtheria. Albuminuria was found in five cases. Five maintained it during the presence of the membrane and the pulse oscillated with it, nevertheless the general state was good, appetite good and face keeping its color, while even in the most serious cases the observers did not hesitate to give a good prognosis. One case had the pneumococcus of Fraenkel and four cases had the staphylococcus form. In these four cases it was the sole cause of the disease and the cases were seldom mild.

Other instances of an undetermined bacillus occurred and eleven cases with a streptococcus, three of these supervening in cases with scarlatinal eruption. These cases were not true diphtheria as shown in several ways, although the membrane in its gross appearance was most characteristic—the scarlatinal redness of the throat chiefly making the distinction. Such cases were transferred to the scarlatina wards ; and the course of this disease was there exhibited In eight of the cases there were streptococci without scarlatina, these having whitish-gray membrane adherent to tonsils and surrounding parts; but patchy, and in two instances pultaceous, and having the staphylococcus pyogenes associated with it. Such cases were sufficiently serious. Summing then these up, there were :

11 cases with a coccus.
1 " pneumococcus.
4 " staphylococcus.
2 cases with a coloform bacillus.
11 " streptococcus,
That is 29 cases in all.

They found cases presenting for a number of days serious anginas, but which rapidly became ameliorated and were all healed in from eight to ten days.

There were forty-four pure diphtherias, of which ten died. Of these, thirty were so mild that they had not been recognized as diphtheria without bacteriological examination ; while the other four were diphtheria from clinical appearances. The first had but little membrane, eight cases had mere white points like follicular amygdalitis. These increased but little during succeeding days or even rapidly disappeared. While these observers never found the bacillus of diphtheria without some membrane, yet in several instances it was found only after very close examination. In fifteen cases with more membrane the glands were always engorged. Unequal bilateral extension and glandular enlargement of the two sides were characteristic of true diphtheria.

In thirteen cases there was no albuminuria, while in fourteen severe cases it was present from the outset, and of these ten died and four recovered. In these cases the membrane was greyish-white, very adherent and sanguinolent and often had extended over all the back of the throat. Albumen was found in every case at an early stage and persisted till death ; while the interrupted pulse was a most significant prognostic, much more so than the temperature.

In the diphtheritic anginas with other associated bacteria the Loeffler bacillus overgrows in cultures the other forms and these are got only by numerous repeated isolations on different cultures. Of these there were twenty-six cases, the chief being the streptococcus growing after twenty-four hours on the gelatine as distinct fine points. Of fourteen of these cases thirteen terminated fatally ; although, inoculated in guinea pigs with the two forms cultivated separately they are not always very virulent. In three cases for several days no albumen appeared but did on the sixth or seventh day. In these cases the patients presented the pale faces, the venous-hued lips, the yellow eyes, the fetid breath, the torpor and generally stricken appearance presaging approaching death.

The cases with associated staphylococcus were likewise very fatal, five cases in all, and all dying.

A similar history of the variation in the bacteria present is given in the cases of croup discussed in the paper by M. M. Chaillou and Martin.

The authors' draw several most important conclusions.

1. That in order to give a prognosis the knowledge of the microbes associated with the Loeffler bacillus is necessary.

2. That some of these were present, as the coccus, augur a favorable issue to the case, and that others, notably the streptococcus, indicate a grave prognostic.

3. Some seemed to aid the growth of the Klebs-Loeffler bacillus, others to hinder its development.

This summary of work illustrates, I imagine, almost every phase of diphtheria which those of us who have had much to do with the disease have experienced.

The detailed peculiarities of different cases referred to in the extended monograph have one after another seemed to call up memories of cases within my own experience, which, owing to imperfect knowledge at the time, seemed in their varying characters to be inexplicable on the basis of a common cause.

The bacteriological results therein set forth so far as separating non-diphtheritic cases from true diphtheria, have been already taken practical advantage of by a number of public health departments, and on this continent I believe New York city was the first to adopt the method by which test tubes with a culture medium are left at certain stations throughout the city, as drug stores, where physicians can obtain them with instructions as to the manner of inoculating them with membrane, thereafter to forward them to the laboratory of the city health department.

With a view to aiding medical health officers throughout the province to determine with the local physicians the real nature of doubtful cases of the disease, the Provincial Board of Health of Ontario has notified local boards to forward as per printed instructions by express, specimens to the provincial laboratory for examination.

This work has been in operation for only a few months, and too few specimens have as yet been examined to enable us to give an estimate of the average percentage of cases in which the Loeffler bacillus is likely to be present or absent, to serve as a standard for the locality.

There are, as pointed out by M. M. Chaillou and Martin, likely to be seasonal differences, and probably different localities, climates and cities will show variations in the prevalence of one or more of the specific pathogenic forms referred to by different bacteriologists.

The advantages which the precise knowledge of the cause of membranous exudates have given, both in the prevention and treatment of diphtheria, while considerable, have nevertheless brought into prominence certain points, which are likely, if not intelligently weighed in their practical bearings, to bring perplexities and difficulties to both attending physician and health officer, quite as great as those existing formerly, where acrimonious disputes have arisen as to whether the sore throat was diphtheria or simply amygdalitis with exudation.

The advantages which the accurate differentiation of the microbe causative of the exudat in any case brings us are principally :

1. That within twelve hours in the ward annex of an hospital, a scarlatinal sore throat with streptococcus can be differentiated and be prevented from exposure to the true disease in the diphtheria ward.

2. That similarly, cases where simple cocci or diplococci are present, may be kept from exposure to true diphtheria in the general hospital wards.

3. That physicians will be able to arrive at more intelligent conclusions as regards the duration of a case and its prognosis than hitherto has been possible.

4. That an intelligent differentiation of cases suitable for treatment with the antitoxin against the Loeffler bacillus has thereby become possible.

5. That the probable length of infectiousness of any case can in some degree be determined by the form of microbe present in the membrane.

Such progress is notable and the needs supplied thereby are fully indicated when we study the reports of contagious diseases hospitals. For instance, in the 3,064 scarlet fever admissions into the northeastern Metropolitan Asylums Board Hospital, London, England, for 1893, there were :

(1) Thirty-six per cent. of post scarlatinal diphtheria.

(2) A number, not stated, of cases of scarlatina accompanied in the acute stage with membranous exudation.

(3) Some cases of diphtheria admitted which proved not to be scarlatinal.

It is noteworthy that in the report of Dr. R. A. Birdwood, the Superintendent, no mention is made of the bacteriological differentiation of the several forms of throat exudations.

As, however, with every advance in our knowledge, we find that the practical benefits are often limited by unforseen difficulties, we find that these bacteriological results at once bring into prominence the difficulty which a health officer finds in dealing with cases of sore throat. Summed up they are:

1. That the physician, being by these recent investigations made aware that at least 25 per cent. of diphtheria cases are not caused by the Loeffler bacillus, or as some would say are not diphtheria, will naturally hesitate to call a disease probably non-fatal by a name placing it under the ban of the Health Act.

2. That physicians endeavoring, as has sometimes occurred, to hide cases in the supposed interest of their clients, will conveniently shield themselves behind the assertion that they could not tell, nor anyone else, whether the disease is diphtheria or not.

3. That supposing the health officer on investigation finds that the Loeffler bacillus is not present he at once is in doubt as to whether the public health interests demand isolation of the patients; or even if he thinks they do, whether he has legal authority to isolate what is not true diphtheria.

4. That even though he isolate such cases as he does true diphtheria, can he maintain the isolation for the length of time, say four weeks, fixed by the best authorities, as necessary for this disease.

5. That assuming he can differentiate between cases, can he with the known serious nature of many cases in which the Loeffler bacillus is not present, afford to treat these as non-infectious, when as a matter of fact they must have been caused by germs carried to the respiratory passage from the air of the infecting medium in the same manner as the Loeffler bacillus.

Personally from the standpoint of an executive officer I recognize most serious difficulties as certain to arise from what all must agree is a notable addition to our knowledge of throat diseases.

I do not at present recognize for working health officers having to deal with sore throat with exudations, any other alternative than to continue to insist on the isolation of all cases of sore throat with exudation; since, while occasional instances of admitted hardship in an unnecessary extension of isolation may be inevitable, yet he will on the other hand have avoided the certain and most serious dangers arising from three-fourths of the cases which are those of true diphtheria, and will have succeeded as well in limiting those other throat diseases by no means free from danger.

The old adage seems here particularly applicable. "*Incidit in Scyllam qui vult vitare Charybdin.*"

REPORT OF THE OTTAWA ISOLATION HOSPITAL.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—In accordance with the request of the Local Board of Health of the City of Ottawa, herewith submitted, your secretary visited Ottawa, on April 14th, and after an interview with the chairman and several members of the local board of health, visited the hospital in the company of the city engineer.

LOCATION OF PORTER'S ISLAND.

The location of the hospital is on Porter's Island, in the Rideau river, a short distance before the stream empties into the Ottawa. The left bank of the stream is higher ground, a street running alongside the river, while the right bank extends eastward as a comparatively flat river bottom for at least a quarter of a mile, till the higher ground beyond is reached. On this flat is what was formerly the Village of New Edinburgh, now a ward of the City of Ottawa. The village is reached by a bridge higher up stream than Porter's Island. On the low ground is an undrained area, with more or less water upon it, at the time of my visit. Some two miles up the river is the dam at the Hog's Back, some forty feet in height, holding back a very large body of water and forming part of the Rideau Canal. The canal when filled from the upper lakes makes this body of water much greater than at the time of my visit. It will thus be seen that Porter's Island and New Edinburgh are at a much lower level than the general level of the city, which is higher than the canal.

SITE OF THE HOSPITAL.

The hospital as already stated is situated on Porter's Island, the latter of some acres in extent, being formed of Utica shale rising out above the present water level on the northeasterly side some six to eight feet, and shelving gently toward the southwest to the water's edge. Over the shale is a bed of sandy loam, reaching on the northeast to a height of some 750 feet above the water level, thence slightly sloping as seen in the attached section, to the west, there being however, several acres maintaining nearly the level of the higher northeasterly bank. The whole island has for years been utilized as a market garden, there being for many years a farmhouse and stable situated on the higher ground to the northeast. The soil is permeable, and at the ordinary level of the river the natural subsoil drainage is good. At the time of my visit, the surface was quite as dry as similar soil on the higher ground.

The several hospital buildings, as will be seen from the attached plan, are situated with the front elevation toward the southwest, the administration building being projected in front of the other three, which in the rear and to the right and left are thirty feet distant from the main building. As seen from the plan and photograph, the administration building and hospital No. 1, are nearer the river and on lower ground than No. 2 and No. 4. The buildings as seen from the specifications and plans are built on piers of masonry, the floor being, according to the plan, six feet above ground at the site and four feet of masonry with flat stone footing below the surface level. The engine-room, disinfecting-chamber, etc., being in the rear of the administration building are, however, at a lower level, the floor being sixteen feet below the floor of the rooms above, which is on the same level as that of the administration building proper.

HIGH WATER MARK OF THE RIDEAU.

As the site of the hospitals, in relation to the high water of the river is of importance, I have endeavored to obtain accurate information on this point. The rank growth of dead grass on the fore-shore to the northwest indicates that the river level must during all the months of vegetation, be at a level similar to that at the time of my visit. This is further seen in the fact that the low ground at the lower end of the island has been cultivated and grown a crop down to quite near the river band. It may therefore, be concluded that except at periods of specially high water the hospitals are not in any danger of being swept away by flood waters. That such high waters have not for many years if ever, swept over the whole island may be concluded from the fact of the old house and barn having remained where they are so long. As will be seen from the level in the section prepared by the City Engineer, the floor level of the several buildings is at least as high as the ground at the old barn, one of the highest spots on the island, and as a matter of fact some two feet higher. As however, the high water did during the present year reach a point some 12 inches above the ground level of the front of the administration building, and as there is at present some seven feet of water in the engine-room, it is apparent that the waters, as matters may exist, even if only temporarily high, create serious inconvenience and even damage. The cause of the high water in the river at this point is stated by the City Engineer, and with apparent correctness, when the shallow character of the river is seen, to be due to the shallows near or at the upper end of the island in the left channel as well as at another point opposite the Grey Nuns' Convent and above the railway bridge. Anchor ice forms at these points and as the floating ice and waters come down in the spring-time an ice dam is formed thereby causing the flood waters above to rise rapidly. For several years past the precaution of keeping an open passage some fifty feet wide by breaking the ice with dynamite has prevented the water from reaching its former height marked on trees at a point some two feet higher than the high water mark of this year.

SUITABILITY OF LOCATION AND SITE FOR AN ISOLATION HOSPITAL.

From the foregoing statements, it is apparent that there are three principal physical elements which enter into the question of the suitability of the site: (*a*) location; (*b*) physical character of the island itself; (*c*) the freedom from danger of high water.

(*a*) With regard to the first, I am of opinion that the location is not such as should have been chosen unless there were preponderating advantages to offset its following positive disadvantages. 1st. That the location is relatively damp like river valleys generally, as seen in the fogs which in the later summer and autumn months envelop the low grounds when the higher are free; 2nd That whatever malarial influences attach to river banks generally with the organic deposits thereon exposed to decomposition in warm weather, and the low undrained flat lands retaining water at or near the surface, must to the degree that they exist, affect the salubrity of the atmosphere of Porter's Island: 3rd. That the class of diseases, notably those peculiar to children, to be treated in such hospitals especially demand dry and pure atmospheres: 4th. That inasmuch as the end sought after in the establishment of isolation hospitals is to make them such as to be sought even by the well-to-do classes, as well as those living in smaller houses, for the purpose of removing thereto a constant source of danger to other members of the household, it is most desirable that some site should have been chosen to which no reasonable objection to sending a patient thereto could be raised by any family physician; 5th. That however, improbable the breaking away of the Hog's Back dam may be such an occurrence must always be within the range of possibilities.

(*b*) With regard to the physical character of the island itself, the soil and sub-soil must be considered very suitable, and in my opinion no reasonable objection can be raised to the site *per se.*

(*c*) With regard to the freedom from danger from floods, excepting the contingency of the dam above breaking, there is not in my opinion any practical danger from floods. At a comparatively small cost flooding by way of the south-west shore, can by an embankment extending 300 to 400 feet be prevented from approaching the buildings, while even the temporary rise of cold fresh water for a day or two in the spring time cannot injuriously affect the dryness of buildings elevated three feet above the ground, by a rise of ground-water, if the ground beneath the buildings be kept free from surface filth. Such a desideratum applies to buildings no matter where situated.

THE HOSPITAL BUILDINGS.

The accompanying photograph gives a general idea of the situation and appearance of the buildings. As the three cottages are on exactly the same plan the submitted plan of No. 1 gives an accurate idea of each.

The administration building. This building proper is situated conveniently to the hospitals and in its interior arrangements is well calculated to supply the convenience of offices and apartments for visiting physicians and resident staff or house physician and nurses. It is like the other buildings, composed of brick wall eight inches in thickness set on a foundation wall of stone two feet thick and having three feet above ground level to top of joists. There is no excavation under it but provision is made for ventilation beneath it. The rear brick wall of this building has its foundation extending to the same depth as the other foundation of the structure attached to the building behind, containing a cellar excavation thirteen feet below ground level for boiler-rooms, incinerator, disinfecting-chamber, etc., with joists and a floor above on same level as that of the administration building, linen-room, ironing-room, etc., are situated therein.

I have examined this building and find in several parts of rear wall of administration building, large cracks running through the brick work, and very serious settling of walls with floors, doors, etc., in the neighborhood of the smoke stack. These facts, associated with the fact of the engine-room being even now filled with six feet of water, indicates some very serious mistake as to the effects of excavating to a point in the rock lower than the normal water level of the river, or else very defective provision in the puddling of the wall, the setting in cement, and the concrete floor for keeping out sub-soil water.

While the administration building proper may prove useful, I am of the opinion that the rear building to be of any use will require to be largely reconstructed.

Hospital buildings. These are three in number, number 4 is pretty well completed, plumbing, heating and painting being well forward, the other two have some steam pipes, closets in position, and painting begun in one.

As will be seen in the plan, these buildings are set on piers, which according to the drawings call for six feet above ground and four feet below. One pier, in cottage No. 2, which illustrates the rest, was found to have only seven feet of masonry in all, four feet above and three feet below. The piers were generally badly built, and in a number of instances the mortar cracked and the wall crumbled down or fallen apart. I have no doubt that the season of the year, the neglect to take precautions against the frost has played an important part in the unfortunate result, since I find from the minutes of the Board that the contract was not awarded till November 2nd, 1893. I further found that the running beams for carrying partitions are too light for length of space, and that props have been placed under on the frozen ground and that with the thaw these beams have yielded, thereby causing floors to settle with partitions, while cracks in the plaster are seen in this cottage in all directions. The deafening in floors having been put in damp froze and is now thawing out, dripping through, and in some cases the supporting board have been forced off by some cause. As upon the careful laying of floors must depend much of the warmth of a building raised off the ground, there seems in this matter to have been great neglect on the part of the contractors. The glazing in many of the windows is very defective.

The plumbing in this building was not completed, so that close examination of the plumbing was afterwards made in cottage No. 4. The heating arrangements being the same in all the hospitals will be referred to when dealing with cottage No. 4. The water pipes within the building are invariably laid near the floor and on the outer walls thus making their safety depend wholly on the steam heating.

The ventilation of each ward is simply an opening into the attic, six inches by nine inches, through the ceiling with venetians on the top at the apex of the roof.

The plumbing in the kitchen is closed in below, contrary to modern usage.

Hospital No. 1 has not suffered to quite the same extent from defective piers, and yielding of the beams supporting the partitions; but it is rather a matter of degree than a freedom from the defects of construction already indicated.

Hospital No. 4 nearly completed, gives a fair indication of the character of these hospitals. The arrangement of rooms with regard to conveniences of nursing and the conveniences of the kitchen is simple, and will I think, prove satisfactory. The provision whereby the two classes of patients may be separated in each building is likely to be effective; while each division is equipped with sufficient bath and closet accommodation.

The plumbing fixtures of this building were carefully examined with a view to determine the quality of the work. The closet has the trap in earthenware, as in most good modern closets, and from the shoulder of the trap in the sewer side is the vent-pipe opening. The vent-pipe, or break siphon has been dispensed with wholly, contrary to specifications, the vent opening being covered very badly with a lead cap set in loose putty. No four-inch iron pipe as per specifications is present, while the closet is simply screwed down lightly to the floor, over the flanged edge of lead pipe attached to the soil pipe, with some putty between the two. Into the soil pipe below the floor are very badly laid lead pipes leading from baths and sinks, which will be in great danger from frost. All this work must be considered as of the most indifferent character, while the defects indicated, would if allowed to continue, be certainly provocative of trouble.

The heating of the hospitals as illustrated in this building is of a new and somewhat unusal character. The specifications call for 70° heat, at minus 20° F. of cold, but no details as to the amount of steam pipe for each room or each cubic foot of air space are given. Inasmuch as the estimate of such piping made by the contractor must have been based upon the presumed ability of the walls to keep out a certain degree of cold, this has been neutralized by the neglect of back-plastering provided for in the specifications. Calculated on any ordinary standard the amount of heating surface in the wall coils in some rooms is notably less than would fulfil the requirements of the air space.

The administration building could not be examined, the engine-room being largely under water.

Nature of specifications. The specifications of the various classes of work are in some respects exceedingly defective, so much so indeed, in some instances as to make tendering on the job a mere matter of guess work and hence any basis on which the efficiency or quality of the work can be judged becomes impossible.

The following examples illustrate the point.

1. No directions as to depth to lay drains.

2. Cement or clay, indifferently used to make tight joints in Scotch tile, quality nor size not stated.

3. The cement used in walls of boiler-house, floors, etc., brand not specified.

4. Weight of lead pipe to be used for water-pipes nowhere stated.

5. Quality or make of non-enamelled sinks not stated: not stated whether to have traps or how joints are to be made.

6. Closets—not stated how joints are made (See result in settling of closets.)

7. Nothing said about traps to bath, or the make or quality of baths and nothing said about escape pipe from bath safe.

8. No vent-pipe to either bath or basin indicated. Quality of porcelain basin or number in any catalogue of prices not stated.

10. A most important omission is the weight of iron soil-pipe: the difference in cost between heavy and light pipe and the safety of the former makes such an omission in plumbing works a serious one.

11. Specific details regarding gas-pipes is wanting.

12. In the matter of heating, the specifications are extremely defective.

(*a*) No make of boiler nor its horse power is stated.

(*b*) How to be set is not stated, whether in brick.

(*c*) Whether boiler is to be covered with asbestos for retaining heat.

(*d*) Size of steam mains or returns not stated.

(*e*) Nothing said about duct for carrying mains between buildings to be water-tight, whether one-inch, two-inch stuff, or which.

(*f*) Where relief pipes are to be placed in steam pipes is not stated.

(*g*) Size and amount of wall coils not stated.

(*h*) Nothing said about the nature of the boiler test or of the heating test.

13. With regard to the sewage tank the omissions are most serious.

(*a*) Size not stated in specifications.

(*b*) What points on plates or how many rivets to plates.

(*c*) Not necessarily water-tight.

(*d*) How drains are to be brought into tank, or how joints are to be made tight not stated.

(*e*) How much steam pipe is required in tank for given amount of evaporation.

(*f*) Size of outlet or tank.

(*g*) No provision for removal of solids in tank.

(*h*) No trap specified or protection of traps of slop sink from frost indicated.

It is however unnecessary to specify what seems to me most serious omissions in specifications, omissions making any approximately correct tendering impossible, or making extras a necessity if the job were to be finished in the many details necessary, and some of which have been referred to.

Having indicated what appeared to me to be the chief points in my inspection of the site and of the buildings of the hospital, I shall before making any recommendations, refer briefly to the chief points giving rise to the present hospital difficulty.

By a letter from the Local Board of Health of Ottawa, dated March 7th, 1893, as also from other citizens, my opinion was asked in the matter of constructing a contagious diseases hospital for Ottawa, and on my visit to Ottawa, March 16th, I discussed the question with the local board of health, while the matter of obtaining money by debentures was discussed at the time with the Honorable Richard Harcourt, and provision was made during the year for an expenditure of $30,000. At the time of my visit I inspected both of the buildings used as isolation hospitals, one managed by the trustees of the County of Carleton, Protestant Hospital, one managed by the Roman Catholic authorities. The local board of health was apparently anxious to have an hospital directly under its control to which they might send all contagious cases, whether cholera, smallpox, diphtheria or scarlatina. It must be remembered that they feared the introduction of cholera to Canada. The old burial ground block where these old buildings were was an admirable site for the proposed hospital but a fear of not securing enough land at a reasonable cost to give the board power to expropriate seems to have sent the board elsewhere to select a site. These matters will be found referred to in the report of the secretary to this board dated March 10th

ORIGIN AND PROGRESS OF THE HOSPITAL

As will be seen from the minutes of the local board of health meetings, a committee was appointed May 30th, to report upon the location and expense of available sites for the same.

On June 13th, a report of this committee was adopted. At subsequent meetings plans were discussed, notably on July 5th, with a committee of medical gentlemen, when all present urged that there should be only one hospital for all denominations. Nothing appears in the minutes submitted to me regarding the site until August 29th, when the board appointed a committee to take steps to acquire Porter's Island, and that a meeting of medical gentlemen with the local board of health was called for September 6th, to discuss the plans of an hospital. At this meeting eighteen physicians were present, and after inspecting various plans a combined committee of aldermen and medical men was appointed to report on plans in a fortnight. On September 11th, Dr. Robillard, met the board and explained from past experience the amount of space required; when the board decided on the plan of four distinct hospital buildings, and at the same meeting Mr. Stalker was appointed to prepare plans.

Plans were submitted on September 18th, but were not adopted until some estimate of cost by the architect was obtained. On October 3rd, this information was obtained. At this meeting the plans were adopted and the architect instructed to prepare specifications.

The next meeting reported was in October 25th, when the estimates given showed the buildings would cost $27,000. Certain changes in specifications to make them more specific were ordered and the architect was instructed to make new tenders. On November 2nd, the contract was awarded at $16,400. The arbitrators reported the award *re* Porter's Island at the same meeting.

In testimonials dated June 19th, and signed by Drs C. R. Church, W. R. Bell, J. A. Grant, A. A. Henderson, L. C. Prevost, Henry P. Wright, the following reasons are given why Porter's Island was fitted for an isolation hospital.

1. Not interfering with the rights of others.

2. Not entailing heavy expenditure by expropriating surrounding properties.

3. Complete isolation.

4. From sanitary standpoint nothing is wanting.

5. Elevated 80 to 100 above the Ottawa river.

6. Not contiguous to public road and easy of access.

7. The last four gentlemen say, "It is exceedingly well located for such an institution, being in fact the most desirable location in or about Ottawa."

Remembering the constant "economy" cry raised when any such work is undertaken, I can very well understand if it was a fact that Porter's Island site and approaches was much the most economical of any in the city, that aldermen would naturally select the site with so many prominent medical gentlemen's specific statements as to its special fitness.

The idea of utilizing the new hospital for all classes of patients, made the local board of health naturally anxious to provide facilities of accommodation for preventing friction in the administration of its internal affairs when both Protestant and Catholic nurses would be employed. Remembering all the circumstances connected with the changes from the old conditions I am of the opinion that the local board of health had acted in this matter in the interests of the public health so far as their judgment in the matter could go. While the steps taken by the local board with regard to the class of buildings from beginning to end seem to have been taken with due regard to public health interests, perhaps even with a generous disregard in matters of construction to mere economy of administration, yet in the details of the final plans so serious neglect and oversight are evident of certain specific portions of the work already indicated as are absolutely essential to the permanent character of the buildings, their sanitary conditions, their proper and economical heating etc., etc., that I can only explain them on the supposition that the natural desire of the local board and council that had inaugurated this work to see the work well under way before their term of office expired, made them overlook the special kind of construction they were undertaking at a season of the year, which, if building in Ottawa of a public work were excusable at all, must only be with special precautions against the effects of frost or under the pressure of a serious epidemic.

RECOMMENDATIONS.

1. For reasons stated with regard to the location of the site I do not consider it advisable to proceed with further large expenditures on Porter's Island for hospital purposes, but that this site be considered rather as a temporary one for this purpose, when it will doubtless be found in the future useful for many city purposes, such as the site for an incinerator, for which position it would be admirably fitted.

2. The administration building proper be completed as per specifications but that the rear portions have the tall chimney torn down, bad walls made good the boilers removed, the incinerator and proposed disinfecting chamber to be so constructed as to merit the approval of the Provincial Board of Health, and the excavation filled up to a point well above the level of ground-water without its walls to below this point outside and in to be made water-tight with cement.

3. That the basement be utilized for a furnace sufficient for heating the administration building, for coal cellar, and cellar for vegetables, etc., and for placing a small steam disinfector of known goodness.

4. That the sewage disposal be after a manner to commend itself to the approval of this board.

5. That hospitals No. 2 and No. 1 have piers made good, proper supporting beams under floors, and generally to have these parts of specifications carried out.

6. That in No. 4 the floors be made warmer by felt paper and tongue and grooved flooring on the under side of joists.

7. That in No. 4 the walls be back plastered as per original specifications.

8. That in No. 4 the plumbing be overhauled and finished as modern, first-class work; and provisions be made by which all nearly horizontal pipes will reach the soil-pipes above the floor thereby avoiding certain trouble with the frost.

9. That No. 4 be heated by its own steam boiler attached to present steam coils, and to such additional piping as may be necessary to obtain sufficient heat.

10. That hospital No. 1 have its plumbing and sewage disposal in a manner which will commend itself to this board, and that it be used only as a summer and overflow hospital from No. 4, having only so much space heated by gas or electric or other stoves during the next winter as may be absolutely required, until experience has shown the quality of No. 4 during the winter.

11. That hospital No. 3, be condemned absolutely, and the board refuse to take it off the contractor's hands.

12. That as for whatever civic purposes the island may be required, the protection of the low southerly shore for some distance is necessary. I am of the opinion that a breastwork of stone and earth of materials such as are on the island, extending from near the bridge approach along the front of the administration building following the line of high water around for some 400 feet will adequately protect with the height of floors above the ground level the buildings and inmates from any harm arising from the ordinary floods such as have occurred within recent years.

13. That the local board of health should without delay obtain options on properties with a view to a purchase after the fullest investigation of a site so eligible and attractive that every parent in the city will be encouraged to send the contagious sick there, both for their own family's protection and for the safety of the general public.

All of which is respectfully admitted,

PETER H. BRYCE,
Secretary.

REPORT *RE* TRANSPORTATION AND EXHUMATION OF THE DEAD.

By P. H. Bryce, M.A., M.D.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—It will be remembered that at two different times this subject has been brought to your consideration owing to representations made by the railway companies with regard to the arrangements entered into by the baggage agents of the different Canadian and American companies.

The matter has again been brought before the Board by a committee of the Provincial Undertakers' Association in the communication herewith presented which has been made after an interview the committee had with myself in September last.

From the communication it is evident that the transportation of corpses must be placed on some more regular and satisfactory basis than exists at present; but it would appear that the position of the whole question of the handling of corpses requires to be reviewed.

By reference to the resolutions adopted in 1891 and found on page 64 of the printed report of the Board for that year, it will appear that the Board expresses in Resolutions 2 and 3 the opinion that diphtheria, anthrax, scarlet fever, measles and puerperal fever should absolutely be forbidden transportation by train.

So far these views have been expressed in Orders-in-Council *re* Diphtheria, dated December 23rd, 1891, and those *re* Cholera not re-enacted by any Order-in-Council, for 1894, and in the regulations *re* Scarlatina recommended for approval of the Lieutenant-Governor-in-Council, and dated February 16th 1894. There is not in the smallpox regulations, adopted 5th September, 1885, and still in force, any clause bearing upon the subject of disposal of the dead.

It is thus seen that, except under the general statutory clauses of the Public Health Act, neither this Board nor the local boards of health have at the present moment any powers definitely laid upon them in the matter of the treatment of the dead, except in the single matter of private funerals of persons dead from diphtheria. This compulsory power is limited to burial in a cemetery commonly used for the municipality.

Such then is the position which public health authorities are in, in Ontario, and it is at once apparent that it cannot be considered satisfactory.

Before, however, making any recommendations regarding the matter, it may be proper to review this question of the disposal of the dead in the light of modern science.

At the Seventh International Congress of Hygiene and Demography, held in London, England, in 1891, the question of the disposal of the dead was dealt with by several prominent authorities and the discussion turned principally upon Cremation *vs.* Earth Burial.

Sir H. Thompson, the champion of cremation in England drew a strong picture of the evils springing from old intra-mural cemeteries, wherein during centuries were crowded body upon body in the same grave; while Francis S. Haden, F.R.C.S., was equally positive against cremation as stated in the outset of his paper which is as follows. "The object of this paper, I may say at once, is to contrast the safe and rational disposal of the dead prescribed to us by nature with the unsafe and irrational method of burial which we practise, and with the equally unsafe and wholly unnecessary practice of cremation."

It is hardly necessary in this connection to yet discuss cremation as a mode of disposal of the dead in Ontario, since in my opinion neither public sentiment, public safety, nor the municipal nor private purse is prepared to make the capital expenditures for crematories as a business venture; but some points referred to by Mr. Haden are of practical interest and importance. He refers to the report of a royal commission which sat for three years and reported in 1843, and contained amongst others the following conclusions:

"That although they both saw and reported that no Government but our own entrusted so important a matter as the burial of the dead to private persons—still less to undertakers, joint stock companies and owners of ground interested in finding room in it for as many corpses as possible, and in enclosing those corpses in the costliest possible envelopes—they yet in their report formed no conclusions and made no recommendations on the subject; and that in suggesting the closure of the old and the opening of similar burial grounds outside the town, they leave the administration of those new burial grounds an open question."

"And finally, that the Government of that day in opening the new cemeteries in the stiffest clay, and in stipulating that they should not come within a specified distance of the town, forgot apparently that there was nothing to prevent the town from coming up to the new cemeteries, and, as a consequence, that one of the worst of these cemeteries, containing as it already does, unresolved 155,000 corpses in an unadvancing state of putrefaction, is now the centre of a populous and fashionable district, and that every day of the week makes a sensible addition to the horrible quotient."

He further refers to the condition of the old burial ground of St. Andrew's on Holborn Hill, which had to be cut through in 1875 for making the new viaduct.

"What, however, was most noticeable was the fact that both the bodies themselves and that that enclosed them were, as to decay, in much the same state as when they were first buried—in a state, that is to say, of an unadvanced and unadvancing decomposition, and, even as to this, that little or no difference was observable between the interments of yesterday and the interments of Charles II's time. On what, therefore, I found myself in the position of having to ask myself, did a fact in every way so remarkable, depend? It was not in the nature of animal matter to remain thus unresolved. All nitrogenous matters were and must be so resolved when buried within the earth. What had we here then to account for a state of things in every way so abnormal? And then it was, and not till then, that I remembered that wood was a non-nitrogenous body, and, this being so, that it would not undergo disintegration when thus buried; and, this reflection being supported by finding the very sawdust which has been used for filling in the coffins also unchanged, it was I found, impossible to resist the conclusion that it was the hermetical enclosure of these perishable bodies in coffins that were themselves imperishable, which had arrested their decay and prevented their resolution; in other words, that it was we ourselves, by the unintelligent practice in which we were engaged, that had brought about this terrible accumulation; and, such being the case, that it rested with ourselves— and that at any moment we pleased to undo the mischief we had done

But if, as I think I have now shown, it is the imperishable coffin which is the material cause of so much mischief, the moral cause of it—I regret to have to be so outspoken—is the unreasoning sentiment which prompts us to keep our dead unburied till its use becomes a necessity. Why, I again ask—the terrible cost considered—do we persist in such a habit? Why does the law, so stringent on this point in other countries, permit us to do it? The signs of death are now too well known to be mistaken by anybody. One of these signs—the rigor mortis—is within the recognition of anyone, and it is within the easy comprehension of everyone that it is the subsidence of this state of rigidity which is the commencement of putrefaction; and again, that it is this commencement of putrefaction which necessitates the hermetical enclosure referred to. Obviously, therefore, what is here wanted is legal proscription—that gently imperative guidance which we all look for and find to be such a relief under circumstances which impair for a time our own proper judgment, and which at the hands of a paternal Government I say we have a right to look for. It is quite a mistake to suppose that such action would be resented. There was a consensus of opinion in its favor when I first wrote upon the subject, and there would be again, the moment it was seen and understood that the Government was in earnest in the matter. Meanwhile, I hope I may be forgiven—and if I am not it matters little since I shall so soon be called upon to illustrate my own theory—if I venture to say that I know nothing more characteristic of the kind of government we enjoy than that the announcement of a state of things at once so little creditable to our intelligence, so injurious to our interests, so obvious as to its cause, and so easy as to its remedy, should, for fifteen years, have been so entirely ignored as to have produced nothing better than the "memoranda" which are still issued by the Local Government Board for which I fear I can only call improper and insanitary burial, and the unnatural, unnecessary and dangerous proposals of the advocates of cremation."

Mr. Haden concludes by making the following practical recommendations for what he calls safe and proper burial.

1. For burial within the earth as the only legal mode of disposing of a dead body.

2. For a limitation of time beyond which it should be illegal to keep a dead body unburied.

3. For the illegality of strong coffins, brick graves and vaults, and of all contrivances having for their effect to retard resolution, and to confer on the dead a tenure, practically illimitable, of the soil which is necessary to the purposes of the living.

Too many similar illustrations exist of the condition of these old cemeteries either to doubt the existence of similar places or to make the cause of their continuance difficult to explain.

Within the last several years the questions of the influence of cemeteries on ground air, and of the soil and the air over cemeteries have been carefully investigated both in France and Germany by some of the most prominent scientists, and remembering that in those foreign countries the method of coffining has been for the most part that of placing the body in the more readily perishable materials we are prepared for the following results of experiments:

Thus, Brouardel, Carnot, Mesnil and Miquel, of Paris, have established:

(*a*) That the dangers due to escape of gas from cemeteries, even in Paris, are absolutely imaginary where such cemeteries are exposed to the free outer air; and that the air of cemeteries is pure and free from all deleterious gases.

(*b*) That the soil of cemeteries only encloses carbonic acid in great quantity to the exclusion of all other gases in appreciable quantity.

(*c*) That the decomposition of bodies laid in soil is greatly aided by drainage.

Further, Brouardel, Mesnil and Ogier found that:

(1) That the more the inhumed body is in contact with the air by the permeability of the soil and the porosity of the bier the rapidity of its destruction

will be greater and more complete, these conditions favoring the development of the low forms of life; these "laborers of death," which are the active agent of destruction of the cadaver.

Again, Reimer in "Zeitschrift für Hygiene," vol. 7, states:

1. That burials do not materially influence the number of germ contents of soil.

2. That neither alongside or below the coffin was the number of bacteria greater than in corresponding levels in control ditches dug in similar adjoining soil. This distance includes one-half metre below and on either side of the coffin. These conclusions of Reimer were the result of a series of experiments on the soil of several cemeteries in Jena, Germany, the soil of which varied, but which was chiefly loam and clay above, with, in most instances, sandy or gravel admixture in the lower strata.

From what has been said on the various points connected with the inhumation of corpses it does not seem difficult for us to draw several definite conclusions.

1. That earth burials should be in caskets of the lightest and most readily decomposable materials compatible with public decency and respect.

2. That the ground of cemeteries should be selected with care and that careful subsoil drainage be supplied for drawing off ground water, thereby allowing the rapid and easy penetration of the air into the soil and to the body.

3. That every available means for the rapid and harmless breaking up of the body into dust should be practised.

4. That in all cases where transportation of corpses is determined upon the outer caskets however costly or strongly made for the transport, must be removed and the inner destructible casket be buried.

This method is illustrated by the following admirable direction drawn up by the *Comite Consultatif d'hygiene publique de France re* cremation:

(*a*) Corpse to be laid in light wood coffin—poplar, basswood, etc.

(*b*) Interior of its walls to be coated with tar in joints.

(*c*) Coffin finished inside with a rubber sheet or tarred paper in a single piece, and so folded that a kind of cuvette is formed well sealed, which will hold any liquids escaping from the body.

(*d*) Around the body outside the rubber sheet, but inside of the coffin, place powdered (humus), cotton waste, sawdust, etc.

(*e*) These materials are placed in layers and each lightly sprinkled with strong carbolic (400 grammes at most).

5. If coffin is to be transported as up to 200 kilometers, the first coffin should be placed in an outer box of oak or other strong wood.

6. If over 200 kilometers of distance the inner light coffin should be placed in a lead one 2½ m.m. in thickness, and this finally in an outer wooden shell.

7. The body should be burned within twenty-four hours of arrival at crematory, the inner light coffin alone being burned.

8. At time of burning the lead coffin is taken from the wooden shell. This is then placed on a marble or other table, impermeable to liquids, and before being opened is perforated with a small hole to let out gases, which are deodorized on their exit. The inner light wooden coffin is then taken out of the lead casket and at once placed in the crematory.

9. Any liquids left in the lead coffin are carefully sponged up with cloths with five per cent. carbolic solution and immediately burned.

10 The lead coffin is then disinfected by flaming it.

These rules are sent from one *mairee* to that where burial is to take place

The scale of tariff for incineration of the French Cremation Society runs from 250f. to 50f. and free.

The Paris society gives right for ashes to remain, if wished, five years in their columbarium, further rental paid for plots one metre square are sold for funeral urns in the cemeteries.

Having dealt with the details of procedure which appear to be the best in matters of interments, we at once arrive at the point of what must be the rule of practice in dealing with dead bodies dying from various diseases, infectious and non-infectious.

I have examined the literature on hand with regard to European practice, and am surprised at the absence of specific details on these points even in France and Germany.

I am inclined to the opinion that theory as well as practice there results in the assumption that bodies properly prepared even of contagious diseases, are innocuous in transportation, and that the objections which are commonly taken here by objectors are to the gases and juices emanating from bodies left unburied for a number of days.

From a scientific standpoint the rules laid down by the Committee of Hygiene, Paris, would, if carried out, make any corpse the most dangerous, perfectly harmless.

In a paper read at the American Public Health Association meeting in Montreal last month, a paper was read by a physician who spoke strongly upon the need of a zinc-lined compartment and ice-box in every car in which corpses were transported, but he was somewhat at a loss to explain how he was going to avoid dangers during the previous stage when the corpse was in the house and in transit to the train

This is the practical part of the whole question, for at this stage, if any, the infection from the corpse will be present, and we might go so far as to say that if at this time measures for dealing effectively with the infection from contagious disease have been taken, no danger in the subsequent history of such body can be present.

This is fully illustrated by the neat and delicate method of treatment of the corpse given in the rules of the Paris Committee of Hygiene.

It may be stated that at this stage too in practice a positive danger exists. The friends, pall-bearers, pass into the sick-room and the infected house. Dozens may be there for an hour during some funeral service and for the whole time may be exposed to the air, fetid with morbid exhalations from the breath and dried scales from the bodies of the deceased, according to the nature of the disease.

In such diseases the regulations of the Board in one disease only state definitely there shall be private burial. The question arises at this point *re* regulations relating to the whole question of treatment of the dead, *i. e.*, of legal enactments requiring burial of corpses dead of contagious disease by certain licensed undertakers required to carry out definite rules—and by them only.

If all precautions are not enforced at this period it seems to me idle to disturb ourselves with regard to precautions at later stages, for the danger will have been present throughout. On the other hand if precautions at this stage are thorough, yet as simple and inexpensive as those of the Paris Committee, I am of the opinion that with ordinary care in handling coffins no danger at a later time need be apprehended.

This opinion may be said to apply both to subsequent transportation and even to occasional exhumation. Microbes of these diseases do not multiply in dead bodies but being all aerobes are apparently rapidly destroyed in most diseases by the presence and multiplication of anaerobic and aerobic putrefaction. Whatever dangers are present must be the germs of disease remaining enclosed in the body and its cerements and while gases of decomposition may be given off we know that the microbes of disease present will remain when not destroyed, fixed in their moist environment.

With these facts before us the pressing questions for the Board to determine are:

1. What further steps can be taken to insure the prompt disinfection of the bodies of those dead of infectious disease.

2. How to protect householders and the public from infected clothing and rooms, the clothes, hangings and belongings of undertakers.

3. How to insure the certification of those dead of infectious disease to health authorities so as to prevent the public going to infected houses.

4. How to give perfect safety to the public, while at the same time if possible to satisfy a sentiment present in every community on the continent, that those killed by accident or dying far from home or country shall have their dying wishes fulfilled, that they be buried at home in their native country and amongst their own kindred—a sentiment which found expression in Jacob and was the patriotic prayer of Joseph, greatest in Egypt, next to Pharoah.

I shall not attempt to outline in this report further details of what I deem necessary to fulfil the ends which to me seem indicated and desirable. Of one thing I am satisfied after ten years' experience, that while on the one hand the public are in some degree growing accustomed to the idea that those dead of infectious disease should be privately buried and that their remains should never be removed, yet there has been and will continue to be so fixed a desire to have bodies transported for such sentimental reasons as I have stated, that deliberate falsifications of causes of death will continue to be made by householders, physicians and undertakers, in order to evade the plain intention of the Act as it relates to infectious disease.

Now that tuberculosis is about to be placed on the list of contagious diseases; inasmuch as its victims are yearly in greater numbers, dying away from home in far off climates in which they have sought for life in vain, I am convinced that the existing anomalies in the law and in practice with regard to this whole question require a thorough and systematic revision, and I am further of the opinion that modern science and antiseptic methods are ample both for preventing danger to the public and for satisfying a sentiment, which, whether rational or otherwise, is most strongly implanted in people of Anglo-Saxon blood and English habits of thought.

All of which is respectfully submitted,

PETER. H BRYCE,
Secretary.

TORONTO, Oct. 16th, 1894.

REGULATIONS FOR THE BURIAL AND TRANSPORTATION OF THE DEAD.

MADE UNDER SUB-SECTION 8, SECTION 13, OF THE PUBLIC HEALTH ACT, AND THE PENALTIES ATTACHING THERETO SHALL BE THE PENALTY ATTACHING TO ANY VIOLATION OF THESE REGULATIONS.

(*Submitted for approval.*)

ISSUED BY THE PROVINCIAL BOARD OF HEALTH OF ONTARIO.

1. That all certificates as to cause of death signed by physicians must be presented to the Medical Health Officer of the municipality where the death occurs, whereupon this officer shall on satisfactory evidence being had, as to the cause of death, issue a burial permit in accordance with Form A appended hereto.

2. In all cases when the Medical Health Officer has reason to believe the cause of death is not as stated in the certificate he shall satisfy himself as to the true cause of death before granting such permit.

3. In cases where no Medical Health Officer has been appointed the death certificate shall be presented to the Secretary of the Local Board of Health, who is likewise the Division Registrar, and he shall issue the burial permit when the Local Board of Health is satisfied that the cause of death is as stated in the certificate. In such cases, whenever it is convenient, it shall be legal if the certificate of the physician be presented for certification to the Medical Health Officer of a neighboring municipality, who shall issue a burial permit under the conditions indicated in Reg. 1. When, however, doubt as to the true cause of death in any such case exists the Local Board of Health may employ any coroner of the county to examine into the true cause of death, and when satisfied as to the correctness of the certificate the Secretary of such Local Board shall issue the burial permit.

4. Every Medical Health Officer shall, on being satisfied as to the true cause of death, forward forthwith the original or corrected certificate to the Division Registrar of the municipality wherein the death occurs.

5. In all cases where the Medical Health Officer or Local Board of Health receives a certificate to the effect that a death has been caused by one of the following contagious diseases, viz: cholera, smallpox, scarlatina, measles, whooping cough, diphtheria, croup and puerperal fever they shall be required to have the measures contained in the following subsections.

(*a*) The corpse shall be washed in a mercurie bi-chloride solution of 1 part to 500 as soon after death as possible, and shall immediately thereafter be wrapped in a sheet saturated in the same solution, this to be again wrapped in a double sheet, to prevent evaporation. When delay in placing the body in the coffin occurs a rubber sheet must further be placed over the body to prevent evaporation.

(*b*) In cases of other than contagious diseases, where a permit for transportation by rail or boat beyond the usual municipal burial ground shall have been issued by the Medical Health Officer or Local Board of Health, the corpse shall be enclosed in a rubber or other impervious sheet in such a manner as to prevent the escape of fluids from the body unless otherwise embalmed by a professional embalmer, placed in a water-tight case and properly packed in charcoal and sawdust, or other absorbents in such a manner as shall prevent the escape of fluids.

(*c*) In both of the above cases the corpse shall be placed in the coffin, and the space around it carefully packed with vegetable moss (sphagnum), cotton waste or sawdust, charcoal or other efficient absorbent, for the retention of any escaping gases or liquids.

(*d*) In every case of death from contagious disease the corpse shall be prepared in the sick-room by wrapping in the sheets, and shall thereafter be conveyed to the coffin which must not be taken further than the door of the sick-room unless it is impossible to coffin the body otherwise than by taking the coffin into the room. The sick-room shall immediately on the removal of the body be freely opened to the air, and disinfected according to the rules laid down in Pamphlet No. 1, 1893, issued by the Provincial Board of Health.

(*e*) So soon as the contagious corpse shall have been placed in the coffin the latter shall be permanently closed, and so long as it remains in the house shall be covered with a cloth which shall not be removed from said house until it has been disinfected in a bi-chloride solution.

(*f*) In all cases of death from a contagious disease, the Medical Health Officer or Local Board of Health may arrange for a special hearse or vehicle for the conveyance of such corpses, and all undertakers, before legally conveying said corpses, shall require to obtain a permit from the Medical Health Officer or Local Board of Health in cases where there is no Medical Health Officer.

(*g*) No hearse or undertaker's wagon, either of which may be used for the conveyance of contagious corpses, shall be employed for any other purpose, unless it has been disinfected immediately after being used in every case, in accordance with the Rules for Checking Contagious Diseases in Pamphlet No. 1, 1893, issued by the Provincial Board of Health, and under no circumstances shall the same funeral trappings be used in deaths from contagious and non-contagious disease.

(*h*) Every undertaker or other person preparing the body of a person dead of contagious disease for burial, shall use a rubber coat and overshoes, or other equally effective over-alls, and these shall be placed in the disinfectant solution of bi-chloride before removal from the house wherein is the corpse.

(*i*) Every coffin shall be made of light and perishable materials, so that the air may the more readily reach the corpse and its disintegration thereby become more rapid. If in any case a shell is used it must be similarly made of light and perishable materials.

(*j*) Where non-contagious corpses are prepared for transport to distances not greater than twelve hours' travel, they shall be placed in the same light wooden coffins mentioned in sub-sec (*i*), Reg. 5, and placed in a strong wooden shell; but where the distance is greater than this, the wooden coffin shall be placed in a casket of lead, zinc, copper or wood lined with metal hermetically sealed.

(*k*) No corpses shall be given transport into this Province nor shall they be received into any municipality therein, except under the conditions prescribed in these Regulations, and in all such instances the wooden coffin and shell shall be removed direct for burial to the cemetery wherever practicable.

(*l*) No railway company or other common carrier shall transport corpses within the Province of Ontario except where the Regulations as herein set forth shall have been complied with, as endorsed by either a Medical Health Officer or Secretary of a Local Board of Health on the burial or transportation permit.

(*m*) No cemetery company, caretaker or other person or corporation having charge of a cemetery or graveyard, shall permit burials therein unless these Regulations have been complied with, and evidence of such compliance shall in all cases be the production of Form "A," appended to and forming a part of these Regulations, duly signed by the proper authority; and exhumation for transport or other removal of contagious corpses is absolutely prohibited.

(*n*) Funerals in all cases of contagious disease shall be strictly private, the burial shall in all such cases take place within twenty-four hours after death, and the body shall be buried in some cemetery commonly used for the burial of persons dying within said municipality.

(Form A., Reg. 1.)

PROVINCIAL BOARD OF HEALTH OF ONTARIO PERMIT.

Physician's or Coroner's Certificate.

No..........

.......................189 .

I hereby certify that, to the best of my knowedge and belief that ....

....

(If minor, give parents' name also)

died on the.................day of........................189 , at..

from ....aged...............years.............................mcnths

.....................days.

....
M. D. or Coroner.

Residence................................

PERMIT OF MEDICAL HEALTH OFFICER OR LOCAL BOARD OF HEALTH.

No. ....

....

Permission is hereby granted to remove for burial (or transport) at ....

....the body of..

above described, having been prepared in accordance with Regulations *re* Transportation of Dead, issued by the Provincial Board of Health.

....

....
M. H. O. or Sec'y L. Board of Health.

City of.......................County of........................Province of..........................

Date..............................189 .

N.B.—Paste certificate on top of box containing coffin.

The cause of death must be designated in common English understood by railway men, otherwise the corpse will not be received for transport.

UNDERTAKER'S CERTIFICATE *re* TRANSPORTATION.

No..............

I (or we) hereby certify that the accompanying dead body of....................................

....consigned to..

address..................................Province or State of..

has been prepared by me (or us) strictly in accordance with the Regulations of the Provincial Board of Health of Ontario for transportation by railway.

....
Shipping Undertaker.
.... P. O.

N.B.—Station baggagemen must enter hereon a description of the ticket, the exact route and via what junctional points the ticket reads which is held by passenger in charge of corpse.

From........................to.......................Province or State of.........................

Ticket held by passenger in charge ot corpse is Form...............No...............................

Via.......................to.......................Via.......................to.......................

Via.......................to.......................Via.......................to.......................

Via.......................to.......................Via.......................to.......................

Name of person in charge of corpse......................................

Signed.................................
Station Baggage Master.
Station............

N.B.—Paste certificate on top of box containing coffin.

REPORT ON THE ANTITOXIN OF TETANUS.

By J. J. Cassidy, M.D.

Toronto, January, 17th, 1895.

To the Chairman and Members of the Provincial Board of Health :

Gentlemen,—At the December meeting of the Toronto Clinical Society, Dr. Thistle, having detailed the particulars of a case of tranmatic tetanus, which he had treated unsuccessfully by the exhibition of the usual remedies, said, that in the interests of the public health, it would be desirable that the antitoxin of tetanus should be made available to the medical profession of Ontario in similar cases. He understood that this antitoxin could be obtained, and he hoped the Provincial Board of Health of Ontario would procure some of it, as soon as possible. In the subsequent discussion, participated in by Drs. Strange, Fotheringham and Cassidy, the opinion was expressed that this traumatic tetanus is rarely under the control of any remedies, known up to the present time, and that as its antitoxin has proved curative in France and other European countries, the physicians of Ontario should have the means of employing it when necessary.

The following resolution was subsequently adopted :

> The fellows of the Toronto Clinical Society most respectfully beg the Ontario Board of Health to notice the success of the use of the antitoxin of tetanus in cases of that disease ; and therefore, request the Board to procure the same so that it may be available immediately, when such a case may arise ; and through the journals of medicine let the Profession of Ontario have cognizance of the results.
>
> Sgd. G. STERLING RYERSON,
> President.

About December 15th, I wrote to Dr. Paul Gibier, President of the New York Pasteur Institute, asking him if he could furnish this Board with a preparation of the antitoxin of tetanus, the price of the same, etc. This is his reply :

Pasteur Institute, New York,
December, 18th, 1894.

J. J. Cassidy, Esq., M.D., Toronto, Canada.

Dear Sir,—I have received your letter of the 16th inst., and in reply I beg to say that I will be able to furnish you with some antitoxin for tetanus in about a month. I have begun to immunize a horse for the purpose. The rate will be $5.00 for 25 cc. and $2.00 for 7 cc. Kindly let me know what quantity you will need, and as soon as I am ready, I can send it or notify you.

Yours very truly,
PAUL GIBIER.

In a second letter, written on the 14th inst, he says, "I have a horse to furnish the serum for tetanus, but the animal became so unmanageable that we had to give it up, and another horse, which was under treatment will not be ready before three or four weeks. You could have a small supply of the antitoxic serum, which can be kept for several months if preserved in a cool and dark place, like the ice chest. If we see that it is necessary, we will desiccate it, although the disadvantages inherent to the operation render it undesirable."

I would therefore beg to place these facts before you, so that you may be in a position to decide what action you will take in the matter of the request of the Toronto Clinical Society.

Respectfully submitted,
J. J. CASSIDY.

REPORT OF MALARIA ON THE MADAWASKA.

By P. H. Bryce, M.A., M.D., Toronto.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—Having during the past three years received several communications with reference to the insanitary condition of the village of Combermere, a place of 150 population, situated on the Madawaska river, some sixty miles from Renfrew village, thirty-five miles due west of Egansville, and twelve miles by river south of Barry's bay, the last station of the new Ottawa and Parry Sound railroad, and having in August last, of the present year, received an urgent petition to inspect the district, I arranged to make an investigation, reaching there on Tuesday, October 2nd.

I arrived there accordingly after thirty-five miles of stage, and found the village pleasantly situated on a level, sandy tract, running down to the river bank, where the water stands a foot or so higher, as seen in the evidence appended, than the old summer level.

In order to obtain as full information as possible, I requested that a representative of the "Madawaska Improvement Company," who are in charge of the dams, slides, etc., on the river, be present at my interview with the local board of health representatives.

As a result of my investigation I present the following statement with regard to the extent and effect of the overflow of the lands along the Madawaska at Combermere, caused by the Palmer dam, situated some ten miles below the village:

Combermere, October 2nd, 1894.

Minutes of Evidence re Palmer Dam.

Your Secretary met Mr. J. E. H. Miller, secretary local board of health of the township, Mr. S. Richards, representing the Madawaska Improvement Company, also Mr. William Reid and George Menzies, residents of Combermere, and from them obtained the following facts:

1. The improvements on the Madawaska (*i. e.* the dam) were completed about seven years ago.
2. Before that time the river at Combermere stood, according to Mr. Miller, about one foot lower at lowest summer level than it is at present. (Corroborated by Mr. Richards.)
3. During flood time (spring) the river previous to the existence of the dam at times rose from five to six feet, lasting usually till June.
4. As a result of high water the vegetation was to some extent destroyed, and at points along the stream the noxious smells from decomposing matter existed to a greater or less extent then.
5. When the Palmer dam was constructed the effect of it was to hold up the water after the spring floods to a height, according to both Mr. Miller and Mr. Richards, of at least five feet, about present level.
6. The effect of this increased height of the river has been to keep under water, until the water of the dam is drawn off, about the end of July, an area of land of a number of miles of extent.

7. The localities of this drowned land extend from Palmer dam up the Madawaska twelve miles, up Barry's bay six miles farther, and up the York branch and Mississippi, several bays in each.

8. With the drawing off of the water, large areas of drowned lands are uncovered, leaving large amounts of dead trees and many ponds, which become covered with green growth.

9. From these areas at morning and evening are emitted disagreeable odours.

10. Within a mile from Combermere from 25 to 50 acres of such areas exist after the drawing off of the water.

11. The effect of the high water in the village is:

(*a*) To cause an influx of water in the cellars under houses situated on both sides of the river, and in the houses at least of Mr. J. Denison and Mrs. M. J. Moulton, where it is prevented from draining away.

(*b*) Several wells which existed at the time the dam was built, and near the river, had the water raised in them, in one case flowing over the top of the well. This was about 200 feet from the bank.

(*c*) The taste of the drinking water, according to Mr. Miller and others, was changed, it having now a vegetable taste. Mr. Reid states that the water of his well, although 200 yards away from the river bank, has a bad taste. This latter well is fifty feet from the kitchen door and about 200 feet from the privy (a soak-pit). The manure heap is under cover with no soakage

(*d*) Mr. G. Menzies, a resident for eighteen years of Combermere, (*æt.* 57) states that before the raising of the dam he was in good health, but that in 1892, in August, he became ill, suffering, according to Dr. Kinder, of Rockingham, from pleurisy. The doctor gave no opinion as to its cause. Mr. Menzies states that before he took sick he had several times been nauseated from the bad smells of the decaying slime, the water having just gone out of the dam. The smell that year was the worst he had ever known. He is a cabinet-maker, and the shop is near the drowned land on the west of the river.

(*e*) Mr. Miller states that the first year after the raising of the dam one of his childred (a boy *æt.* 4 years) was sick from what Dr. Kinder and Dr. James (of Brudenell) called malarial fever. No other member of the household suffered. Mr. Miller states that two other families suffered similarly—noticeably had diarrhœa. No deaths. Other cases, Mr. Miller states, have occurred in following years. Mr. Reid states that his child (*æt.* 4 years) became ill in August, 1894, became fevered, and had to be sat up with three weeks. Had nine or ten days of fever, and had had medicine from Rev. J. Robinson. A younger child was sick similarly, and for about the same time was unwell.

There have been no deaths this summer; but especially in P. O'Brien's family, where the water stands in the cellar for some time in the spring, several members were ill. Rev. Mr. Robinson similarly ascribed this to the water.

(*f*) Mr. Reid's mills (woollen) which he rents, had its foundations, during high water till water is drawn off, affected, and at that time the water stood under it.

Mr. Menzies thought that these points covered the noticeable effects in the village of the high water in the dam.

In reply to the question as to any remedies for the present condition of affairs, Mr. Menzies stated that in his opinion:

1. That to remedy the evil caused by the dam, it should be removed; for the reason that the water has become filthy, and holding it up till August or September has resulted in the destruction of vegetation along the river.

Mr. Miller stated that Mr. Menzies had expressed in every way his views as to what the situation requires.

Mr. Reid similarly stated that if this is the condition of producing a change in the present situation, he thinks it ought to be carried out.

Mr. Richards did not wish to express any opinion, but stated that the summer level of the river would be lowered a foot.

(Signed) PETER H. BRYCE,
Secretary Provincial Board of Health.

I hereby declare the above statement to be correct,

(Signed) J. E. H MILLER,
S. RICHARDS,
WM. REID,
G. MENZIES.

From the examination of evidence it is apparent that a very large amount of water is held back by the dams, and that naturally there is an amount of land covered by water to the extent that the shores are low and the water is held up till the end of July, when it is rapidly drawn off to carry down the logs which have been sorted by the river drivers.

That the Board may understand the operations of the lumbermen I shall briefly outline them :

1. During the winter the lumbermen draw logs at their several limits along the river and its tributaries on to the ice.

2. When the ice breaks up in the spring with the floods the logs are brought down from the creeks to the smaller streams by the different companies.

3. The river drivers follow them down keeping them moving till some wide expanse of water is reached.

4. The logs of different owners have, of course, to come down in some parts in the same streams, and get mixed, so in order to separate them the Company's mark is stamped on the logs.

5. According as the mills of a company are high up or down the river the logs are collected into booms, but the general work of selection in the Madawaska is finally completed below Palmer's dam.

6. According to the statement of Mr. Richards, manager of the booms and slides for the Madawaska Company, the selection is generally completed and the final movement downward of the rafts takes place about the end of July or the beginning of August.

7. When matters are ready for driving the logs the stop-logs in the dam are lowered gradually, but to the extent necessary to cover the shallows in the stream below, thereby enabling the timber to make steady progress towards its destination.

8. This drawing off of the water takes, in this instance, probably a week, and this week is, as already stated, in the middle of the hot, dry term of summer.

From what has been stated in the evidence, as well as what would result from the lowering of a large area of water, some five feet within a week, the decomposition of the vegetable organic matter through the whole exposed district must result in exhalations which have always caused more or less definitely marked influences on the health of residents in their vicinity.

With regard to the extent of these bad influences along the Madawaska in the neighborhood of Combermere, I may state that I endeavored to obtain in the greatest detail possible the names of persons known by the secretary of the local board of health and others to have been affected, and the nature of their sickness. The evidence on this point is all given above. From its perusal I am certain that but one conclusion can be arrived at, and that is that the few cases of sickness, definitely described, do not in any degree represent what our experience has taught of the almost universal occurrence of congestive chills and fever in the older districts of Ontario under similar circumstances. There would seem to be the following reasons to account for this absence:

1. The lateness of the season at which the vegetable matter is uncovered,has prevented up to the present, the free development of the malarial miasm.

2. The accidentally small areas of drowned land within a mile of Combermere would, if the miasm were fully developed on the large tract, be limited in its effects, since the influence of distance, and especially of trees, in preventing the spread of malaria is historic.

3. The healthful influence of these northern Laurentian districts, covered with miles of evergreen forests, may naturally be supposed to promote good health and vigor.

4. The absence, except at Combermere, of any settlements along the shores of the drowned lands, would, of course, even if malarial miasm were present, limit its effects to these and to the river drivers.

The question put by me to the complainants as to what, in their opinion, would remove the evils complained of was answered very readily; but the reasons given for such a recommendation would seem with some to have partaken rather of a commercial than of a sanitary character.

Conclusions.—Viewing all the factors in their practical bearing, I desire to present the following points for your consideration:

1. The Madawaska runs almost wholly over the Laurentian region, and hence its shores will be but slowly settled, and then only in favorable localities.

2. That along the whole stream has up to the present been a great lumbering district, the dams being required further back on the main stream as the pine limits have been pushed farther north.

3. That the great bulk of the pine has been taken from its tributaries, according to the statements to me of several persons of the district.

4. That with the advent at Barry's Bay, on the Madawaska, of the Ottawa and Parry Sound Railroad, the result will be that within a few years the driving of logs the long distance to Arnprior at its mouth, on the Ottawa, will cease, the logs being cut in the neighborhood of the new railway.

5. That when the work of driving logs comes to an end there will be no necessity for maintaining the Palmer dam, or if maintained for the purpose of running a steamboat on the main river and branches of the Madawaska there will be no necessity for lowering the water in August, but rather the reverse, of keeping it at its present height, thereby preventing the drowned lands from becoming uncovered.

6. That while it cannot be said that there is evidence at present of any very serious effect having been produced along the stream by the lowering of the water in August, yet inasmuch as the condition produced tends to produce malarial conditions, it may very properly be suggested that the driving of the logs be so far as possible done early in the season, before the waters of the spring have fallen to summer level, or where this is not possible, that they be held over till the cool weather and higher water of the autumn.

7. With regard to the complaints in the matter of flooded cellars and wells, there seem, according to the evidence, to be but a few instances where any serious effects are produced. In such instances where houses are near the river bank it may very properly be arranged between the "Improvement Company" and the householders that the cellars be filled up and replaced by the much more wholesome and convenient arrangement of a larder, built off the kitchen and on the same level, and made warm by double sheeting.

8. Regarding the well water, the river is the almost universal source of supply, but there does not seem to be any reason why driven wells should not be most successful on the sandy soil where the water, as has been proven, is not any great depth below the surface.

All of which is respectfully submitted,

PETER H. BRYCE,
Secretary.

TORONTO, October 12th, 1894.

REPORT ON VANKLEEK HILL MILL-POND NUISANCE.

BY P. H. BRYCE, M.A., M.D., TORONTO.

Mr. Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—At different times during several past years communications have been sent to the Board with reference to a nuisance in the shape of a millpond, situated in the middle of the village of Vankleek Hill. On the 13th of September last I received the communication herewith presented and took the opportunity of my presence in the east of the province to visit the village on October 1st, 1894.

The accompanying sketch roughly illustrates the situation of the pond.

The village was settled first early in the century, and is now a stirring place of 1,500 population, an unincorporated village in West Hawkesbury township, Prescott county.

It receives its name from being situated on a hill rising from the river to the northeast, thence running southerly or southwesterly. The hill, at the point where the village is, is composed of two elevations of a gravelly loam; then lying between these is lower ground, which years ago contained several ponds, connected with each other more or less completely through swampy ground; but with the generally improved drainage of the village both by lessened rainfall and by surface ditches and several sewers, these ponds have practically become reduced to one, known as Shield's Pond, being an area of somewhat more than an acre in extent when full, and in the spring time, or with floods, may even, by backing up, cover several acres along the swampy ground, and causing water to be held up in cellars a couple of blocks away.

At the time of my visit, however, the water of the pond was limited to probably half an acre in extent, and not more than eighteen inches in the centre. This water constitutes a filthy pond hole with an extended area of black mud around it, partly dried toward the edges, and on the side toward the sash factory contains a notable amount of muck formed principally from the decaying sawdust of past years, added to by the soakage during heavy rains of a large heap of sawdust at present behind the mill, at the highest point being some ten feet high.

The cause of the existence of the pond is evidently due to the impermeable blue clay of the bottom becoming more puddled and hardened from year to year.

The pond has been for years the source of supply of water for filling the boiler of the mill. and the owner of the latter seems entitled by some legal decision to the use of the water, although the land on which the pond is belongs to another. The law suit between Colonel Shields and the Mill Company has hitherto made it difficult for the local board to fix the responsibility for the nuisance.

The courts having now definitely given the ownership to Colonel Shields, he was requested to lower the water, which he did by opening the culvert under Mill street, and carrying it in the ditch till it reached, partly by covered and partly by open drain, a covered drain two blocks to the east. This drew off the water to the extent already stated, and now the difficulty arises of what further steps are demanded by the situation.

To appreciate this fully it must be understood :

1. That the mill owner claims a right to the water of the pond.

2. That Colonel Shields owns the land, and thus must be considered responsible for the nuisance.

3. That the village, by the raising of Mill street, must be considered as originally contributing to the nuisance.

Viewing the whole matter, I have arrived at the following conclusions, which I submit for your consideration :

1. The pond is a nuisance of a positive character, and has correctly, I believe, been accused of being the cause of ill-health in the past, both from the effluvia arising from decomposition and from its damming water back into the cellars at high water.

2. The pond can readily be drained by a cutting of sufficient depth carried for a few hundred feet along Mill street east.

3. That the local board of health may properly. under section 60 of the Public Health Act, as well as other clauses, order the abatement of the nuisance.

4. That the owner may properly be called upon to abate the nuisance ; but that inasmuch as the village, by raising the road, has been contributory to the nuisance. it ought fairly to bear a share of the expense.

5. That by a properly constructed drain along Mill street a number of residents there will find it convenient for draining their cellars, as also some on the streets to the north of the pond, and might fairly be called upon for a small proportion of the expense for the advantages resulting therefrom.

6. That should the mill owner lay claim to the water of the pond for his purposes, he would thereby become the occupant of the property and so become liable for the nuisance, and hence might properly be called upon to abate the nuisance, under section 60.

7. That any contention that for the company's purposes Colonel Shields, or anyone else, should be compelled to maintain a nuisance, or that he should, if occupant, be allowed to continue it, is absurd and contrary to the plain meaning of the Public Health Act.

I would therefore recommend that the report be adopted with instructions to the Local Board of West Hawkesbury township to at once order the abatement of the nuisance by requesting the council to at once construct a drain eastward along Mill street, thereafter collecting costs for the same from the parties responsible therefore under section 62 of the Public Health Act.

All of which is respectfully submitted,

PETER H. BRYCE,
Secretary.

TORONTO, October 8th, 1894.

REPORT OF ESSEX CENTRE NUISANCE.

By P. H. Bryce, M.A., M.D., Toronto.

Toronto, October 16th, 1894.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—In consequence of several complaints received, and finally a largely signed petition for the investigation of a long standing nuisance in the shape of a malarial pond-hole, I visited Essex Centre on October 13th, and found the following state of affairs:

The pond-hole complained of is on the rear of a two-acre lot adjoining that on which Mr. May, one of the complainants, lives. It consists of an excavation some three feet on an average depth, extending some 200 feet across the rear of the lot and from 50 to 100 feet forward.

The nearest house, that of Mr. May, is some 300 feet from the nearest point. The excavation was made years ago, the clay having been taken out for brick or tile making. The lot is a neglected one, grown up with grass and weeds which extend to the side of the excavation. No rubbish to any amount has been hauled into the pond-hole, but two-thirds of the excavated space is grown up with grass, leaving the remainder with its clay bottom partly exposed, and partly covered over with water. This area is probably 75x100 feet, about a foot deep at its deepest part. Thus at present it is only a mud-hole. The larger area of the excavation was previously filled more or less completely with standing water, but owing to complaints the council put in a tile drain leading southward to Victoria street, thereby lowering the water nearly to its present level. Thus any larger or extended pond is prevented, but owing to the level nature of the district, it was found that no lower level for the drain can be got.

Recommendations.

1. Although there does not seem to be any good evidence going to show that sickness has resulted from the pond, which is reasonable, remembering that very little decaying vegetable matter is in the place, its bottom being simply blue clay, yet any possible nuisance will be avoided by narrowing the limits of the pond-hole, by drawing into it clean earth and any water, which owing to the level of the drain, would still remain, will be reduced to a minimum.

With such other time as I had at my disposal, I learned from the local board, as well as by personal observation, other matters of interest regarding the sanitary condition of the town.

It will be remembered that from time to time for years, typhoid has been reported as tending to prevail in Essex Centre; but it had been hoped that the general use of the splendid supply of water from deep wells similar to those at Chatham, would greatly remove the prevalence of the disease. No doubt the benefits of the water supply have been great, but other conditions exist, tending to perpetuate outbreaks of fever.

The level character of the peninsula will be remembered. The town is some 12 miles from Lake Erie, 16 from Lake St. Clair, and some 20 miles from Detroit river. The drainage at present is toward the Canard river leading to the Detroit river, some 25 miles by the stream, and the fall is at most thirty feet. It hence follows that at the best any drainage of Essex must be by surface ditches or tile drains laid very near the surface. The present drains have the smallest possible fall, many of them too little at the best. Field tiles are laid at the sides of the main streets as 9-inch drains for drawing off the street water at the corners, and for house drainage.

There is at present to a superlative degree the usual results of such conditions.

Street refuse has washed with sand into the street drains, kitchen sinks here and there lead directly to them and the true character of this filth is seen in the open ditch at its outlet on Victoria avenue.

The tiles in places are half filled with such solid or semi-solid deposits, which serve in storms to dam back water, and in dry weather to give off at every street grating and into house drains and sinks, their pestilential gases. Absolutely open drains would be a notable improvement to the hidden cesspool's created by drains without any regular flushing.

REMEDIES.

1. I strongly urged on the local board of health to take immediate steps to get every covered drain cleaned. This may be done by a head of water obtained from a tank on wheels, which would throw a stream at once into the drain enough to fill it and so create a flush by pressure. This can be aided by a ball sent down the drain in front of the head of water.

2. In other cases it may be found necessary to take up tiles and remove the filth from them. This filth when removed must not be piled up on the street but at once be removed to the fields in the suburbs.

3. When such arrangements have been made, it will be necessary to see that no house sinks connect with the street drain unless properly trapped by a "U" trap and unless they have town water in the house for assuring abundant flushing.

4. Finally at different points on the principal draims, automatic flush tanks must be placed and supplied with town water, whereby at least once a day, 500 or 600 gallons of water thrown at once into the drains, will keep them flushed clean.

5. At the earliest time financially possible the town in order to secure permanent progress must institute a system of separate sewers for dealing wholly with the sewage wastes from the various sewers.

The town has been fortunate in having passed a by-law enforcing the general introduction of the dry earth closet system.

All of which is respectfully submitted.

PETER H. BRYCE,
Secretary.

REPORT WITH SUGGESTIONS *RE* THE SANITARY IMPROVEMENT OF COAL OIL OUTLET, HAMILTON BAY.

By P. H. Bryce, M.D., Toronto.

To the Chairman and Members of the Local Board of Health, Hamilton :

Gentlemen,—At your request, presented through the Chairman of the Committee, Mr. Morris, I visited Hamilton, Monday the 12th November. In company with several members of the city board of health and the city engineer I inspected the various nuisances. I need not describe in this report details which are familar to you but simply refer in these suggestions to the several points indicated on the rough sketch of the district.

There can be no question as to the insanitary condition of Coal Oil Inlet, or of its neighborhood, and our investigation showed again what we have learned by previous examination, viz., that five chief causes for possible nuisance in that neighborhood exist.

1. The sewage from the eastern main sewer of the city. Its dry weather flow is estimated by Mr. Haskins at 403,200 gallons per diem, and assuming 40 parts solids per 100,000 of water, there is daily discharged some 1,600 pounds in the inlet.

2. To the south of this and discharging in the westerly side and nearest the head of the inlet are the drains from the Lowrie's pork-packing establishment, discharging daily much contaminated water from floor washings, rendering tank effluent, etc.

3. Rowlin's Knackery. This is situated on the easterly side of the head of the cove, and the waste waters from floor washing and other sources likewise supply a much contaminated sewage.

4. The Stroud Cattle Barns. The liquid manure from about 500 cattle is being discharged with solids in the outer air on uncovered platforms therefrom drawn away by farmers, but much of it was at the time of our inspection, flowing directly down the hillside to the Inlet. With rainfall to wash this directly to the Inlet it must form, as it has in the past, the largest source of organic deposits in the Inlet.

5. Freeman's Superphoshate works. This well-conducted works similarly pollutes the cove by draining its floor washings, condensed steam from rendering tanks, etc., into the Inlet, farthest to the north on the east side.

These in varying extents have gone on for years polluting the cove, until it presents now at low water, black deposits of some extent, which on being exposed to the sun, give off exhalations of a malodorous character to which must be added whatever is given off from the water whenever the pollution is so great as to make its putrefaction noticeable to the senses.

The question, therefore, of abating the nuisance existing apart from whatever may be due to the buildings where the several industries are carried on, depends upon the adoption of some method whereby the solids in the sewage of the several factories may be treated either separately or together in such a manner as to have a clear effluent freed from at least the grosser pollution, pass into the dead waters of the Inlet.

There are two possible ways of remedying the local nuisances of the Inlet.

1. By gathering the sewage from all the establishments along with that of the main sewer into a new pipe laid beneath the Inlet waters and carrying them out to the bay proper.

2. By gathering all the sewage by short sewers from each factory, and one sewer so constructed as to carry the dry weather sewage from the sewer proper to a common point, where it would be received into precipitating tanks and its outlet subsequently discharged into the Inlet.

With regard to the two plans, it is apparent that if a main be laid out to the bay the local nuisance of the Inlet will be abated, but it is a matter for the consideration of your Board, how long this pollution of the bay by city sewage can go on before the pollution exceeds the cleansing ability of the bay.

Manifestly the point is being approached day by day as the city population increases, and especially along the shores where the sewer outlets are; and it becomes a question at what time the city must begin the clarification of its sewage at the various points of discharge.

If it be found that the cost of carrying a main to the open waters of the bay, is, as it must be, a costly matter, I think it well that an attempt, as the first of a series, to treat sewage by tankage be instituted in this case.

This is especially desirable, since several large industries of a peculiarly offensive character are interested, and may very properly be called upon to pay their share in the treatment of this sewage found so offensive.

I have by a rough diagram indicated the position of the different drains and of the tanks in the centre of the Inlet.

The following will roughly indicate my ideas, which in detail must, however, be worked out by an engineer, interested in the success of the work, as experience shows that success or failure in every case depends on the work, and perhaps still more on the daily intelligent and interested attention given to the tanks. I would therefore suggest:

1. That on a firm bottom two tanks be constructed of good masonry of such capacity as to hold twelve hours' sewage from
   (*a*) Dry weather flow of sewer.
   (*b*) Lowrie's Packing House.
   (*c*) Rowlin's Knackery.
   (*d*) Stroud's Byres.
   (*e*) Freeman's Works

2. That from a tank set above these receiving tanks, a quantity of solution of milk of quick lime, of sulphate of iron, or of alum equivalent to 1 or 2 per cent. of the sewage be delivered by a set screw or tap, into each receiving tank as it receives the sewage.

3. At the end of twelve hours the sewage discharge must be rapidly drawn off by siphonage, the discharge having been turned into the alternate tank.

4. The sewage thus delivered will thereafter be carried to a series of delivery pipes to an area of flat-beds which have been made in the cove by filling in the bottom with such permeable materials as cinders or gravel, to a point say two feet above high limit level of the bay water.

The surface of this would most successfully be prepared by a series of horizontal ditches as at London asylum sewage farm, only closer together than there; to which the clarified sewage would be discharged by carriers from the discharging tank.

5. The flow to these beds to be successfully treated must be intermittent, the other ditches being rested for a day or two and their surface kept fresh.

6. It is essential that the materials of the filter beds on top be carefully selected as to pure cinders, small gravel and covered with sharp sand. Any clay will very materially affect rapid filtration.

The extent of tankage, the construction of the tanks, their ventilation, the method of application of precipitating solution, the area of the filter beds, must all be carefully worked out; and it cannot be expected that subsequently they will work without attention; but if carefully prepared, I am certain that they will solve the problem, so long a question of dispute between the manufacturers and residents of the east end and the council.

I shall be glad to aid the Board in making further suggestions, if requested, at any time when plans are being worked out.

I have the honor to be,
Your obedient servant,

P. H. BRYCE,
Secretary.

TORONTO, December 3rd, 1894.

REPORT REGARDING A PORTION OF UNDRAINED LAND IN STRATHROY.

BY P. H. BRYCE, M.A., M.D.

TORONTO, June 4th, 1894.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Acting on the application of the Medical Health Officer, the local board of health and Dr. Thompson, I visited Strathroy on May 29th and investigated the nuisance complained of by Dr. Thompson as seen in correspondence herewith submitted.

In order to explain briefly the nature of the complaint I shall refer to the situation of Strathroy.

It is situated on the two banks of the river Sydenham, a river ordinarily about a chain wide, with flats of a considerable extent along the stream throughout the whole town. Up the stream and in the east end of the town is an old mill-dam which holds up the water in a pond and has created drowned land to the extent of many acres.

The flats below the dam are a sandy alluvium and with the exception of a few washouts and old watercourses caused by floods in the past holding water the flats are now nearly dry and grown up with good pasture grass, with here and there, however, the coarser swamp grasses being present.

From the map herewith submitted you will gain an idea of the streets of the town. From this it will be seen that the greater portion of Victoria street runs within the area of the flats along the east bank of the river, and that running northward, it crosses the stream, which near this point bends sharply to the south. Just to the north of Front street and between it and North street and to the east of Victoria street lies a small area of low ground cut off from the flats by the raised roadway. To the east of this is a small lot partly on high ground and which is unfenced and has had from time to time town refuse deposited on it; and to the east of this again is a house and lot owned by Dr. Thompson. The tenant therein complains of damp malarial odors coming from the vacant land and low portion of the street to the west. The low ground is grown over very largely with swamp grass and along the two or three ditches that cut the soil is seen to be a black swampy loam on the top of the sandy loam. This ground has been partially drained by the ditch along the roadside which drains toward a grating in the tile drain leading westward under the roadway across the flats to the river.

The water has in the springtime at times dammed up the water in this drain for a few days, but in practice it may be said there is enough of fall from the area complained of to the river to make its drainage always possible.

Recommendations.—1. To efficiently drain the wet ground on the street and adjacent lot I would advise that a six-inch field tile drain be carried from the grating of the present drain to the creek to a box manhole set at the end of the drain coming west on North street. At least four four-inch tile laterals should be carried from the Hilton lot or across it to the six-inch main drain thereby enabling the wet soil to be drained. This seems the more necessary as the higher ground being sandy drains its water to the low ground along the hardpan below. If these drains are laid properly and covered at the joints so as to prevent sand entering this ground ought to become dry.

2. The local board of health should notify the owner of the Hilton lot to have all deposits thereon removed, and if not done within a given time the board should remove same at the expense of the owner.

In reporting upon the sanitary condition of the town I would further refer to the mill-dam and drowned land already alluded to. Every physician spoken to and several town officials all agreed that the east part of the town was rendered malarious by the presence of drowned land becoming uncovered in the dry summer months. This pond once more illustrates the fact that the mill-dams throughout the province, once rendered necessary, are now practically useless and are superseded by steam power. Their privileges, where not already abandoned, ought to be given up by their owners; or where not, the municipal authorities should deal with them as public nuisances, and I would recommend that in this case the local board of health take measures for promptly dealing with the question.

All of which is respectfully submitted,

PETER H. BRYCE,
Secretary.

REPORT OF THE COMMITTEE ON WATER SUPPLIES AND SEWERAGE ON THE PRESENT CONDITION OF THE INGERSOLL PUBLIC WATER SUPPLY.

TORONTO, May 3rd, 1894.

To the Chairman and Members of the Provincial Board of Health :

GENTLEMEN,—It will be within your recollection that a report submitted by the Secretary was adopted by the Board at its quarterly meeting in May, 1890, in which was discussed the problem of supplying Ingersoll with public water. In order to recall to your recollection certain points in that report, your Committee present herewith a copy of the same as published in the annual report for that year.

For your information it may be stated that what in the report is called the Choate Creek scheme was adopted by the town, and that the agreement between the corporation of the town of Ingersoll, the party of the first part, and the Ingersoll Waterworks Company of Ingersoll, the party of the second part, contains the following paragraph :

"That the parties of the first part agree that the parties of the second part be and they are hereby authorized to construct, maintain and operate a system of waterworks in the town of Ingersoll for the purpose of supplying the town and its inhabitants with pure and wholesome water for fire protection and for manufacturing, sanitary and domestic uses for and during the term of fifty years from this date" (9th April, 1890).

After sundry provisions with regard to entering upon streets for excavating for mains, and for protecting the public against accident or injury, the agreement contains the following further provisions :

"The pumping station shall be located at or near Choate's pond, in the town of West Oxford, and the water supply shall be obtained from said Choate's pond or from the stream emptying into the same at some point which shall be satisfactory to the Provincial Board of Health, and any dispute or disagreement between said town of Ingersoll and said Waterworks Company in regard to the quantity or quality of the water supply shall be referred to said Provincial Board of Health. The town of Ingersoll shall pass all such by-laws as are necessary to protect such source of supply from contamination or pollution."

It will be noticed that the agreement in which these provisions occur is dated April 9th, 1890, and that the report adopted by your Board was drawn up on February 24th, and had been therefore in the hands both of the corporation of the town of Ingersoll and of the Ingersoll Waterworks Company for more than a month before the agreement between these parties had been made or signed. This being the case, it would seem apparent that the provisions already quoted, whereby any dispute between the parties of the first and parties of the second part would be referred to the Provincial Board of Health, must have reference to such suggestions as were contained in the report adopted by this Board and in their hands at the time.

These preliminary remarks being made, it is now proper to refer to the various communications which since these works were instituted have passed between the Board and the two parties interested, in the Ingersoll water supply.

From the correspondence contained in these letters, it appears that for some two years dissatisfaction has existed in Ingersoll with regard to the condition of the water supply, and that analyses, showing the water at different times to possess the more or less constant characters which similar sources of supply generally produce, have failed to remove such dissatisfaction.

Your Committee having by the letter herewith read, been requested to make a formal enquiry into the present condition of the Ingersoll public water supply, notified all parties interested by letter and telegram that such investigation was to be held, and invited them to meet your Committee in Ingersoll on Wednesday, the 2nd of May, 1894.

Your Committee accordingly visited Ingersoll, and in the company of the Chairman and several members of his committee and other members of the council and of the local board of health and the medical health officer, and Messrs. Moffitt and Duncan, representing the Waterworks Company, and of Mr. Bruce, representing the bondholders, examined the whole works and source of supply, and would report as follows :—

1. The water of the pond occupying an area of from 15 to 20 acres was very low, in consequence of having been drawn off, as stated by Mr. Duncan, the manager, on Saturday, the 28th of April, to repair the aqueduct of the pipe leading from the pumping-basin in the creek under the pond to the pump-house. Considerable areas of the flat shore were thus left exposed, showing black deposits which had been gradually deposited from the water. The large wooden tube leading to the pump-house was found to open into a chamber forward in the flume at the lower end of the pond, the water in the flume some 4 feet deep having to pass through a wire screen into the chamber, and thence through a second screen. Against the inner screen and above the present water level a number of small fish had been forced, probably at the time of the drawing off of the water on the 28th ult.

The course of the 10-inch tile aqueduct is along the west side of the pond, being at present within some ten feet from the shore and at places exposed to view on the top.

2. The course of the pipe was followed. At a boat-house south of the easterly boat-house, some ten feet from shore, were fragments of broken tile, which had been removed when, as Mr. Duncan, the manager stated, the pipe was replaced on the 28th of April, three lengths of tile having been found broken. A few feet further west, near where the pipe was exposed, a constant bubbling up of water over the pipe was observed, and a similar condition also occurred some 60 feet further to the west. The pipe west of this runs under the black deposits already referred to, passing into the creek along its north side, and thence opens into a square box some 14 inches square into the pumping-basin. The mouth of the pipe is there protected by a wire screen, and outside this again is another screen running across the basin, its frame fitting rather loosely. The settling-basin is made of plank some 6 feet wide by 12 feet long, having a depth of some 3 feet of water. The outer screen is of wire of one-fourth mesh, and was partially covered with the fine swamp muck deposits brought down by the stream. This outer screen was removed and the mouth of the pipe closed by a gate placed across the wooden box entrance. The pumps, at the direction of the manager, were then in motion, and points along the pipe where the bubbling was seen were examined. It was found the bubbling had ceased after the upper end of the aqueduct pipe was closed; no suction inward was seen. A signal having been given to men stationed at the pumping-basin to remove the gate, the bubbling was seen to again begin some fifteen seconds after the gate was removed. The presence of the leaks was thus made apparent. The mouth of the pipe was again closed by the

gate, and the pumping-house visited. The pressure gauge stood at 80 lbs., and the two pumps were making 13 strokes each per minute. The manager stated, each pumps 17 gals. to a stroke, there being thus pumped about 440 gals. per minute. Assuming the aqueduct pipe to be 1,000 feet long, with an average of three-fourth of a foot area, it would be emptied in about ten minutes. Although the pumps had been working longer than this time, after the closing of the mouth of the pipe, there was no evidence of the pipe being emptied, the pumping running quite evenly. It may be considered, then, as proven that the aqueduct leaks badly, and that upon the height of the pond will depend whether pond water is sucked into the pipes or not.

That the pond water is impure may be gathered from the character of the deposits on the exposed shore along its banks, and from the fact that Wetherell's farmyard on the east side, some 100 feet from the pond, drains toward it, and in rainy weather will pollute it, while on the westerly side are two farmyards and pig-pens, draining toward the pond within 100 feet of the pond, a pig-pen in one instance running close to the creek, below the pumping-basin.

3. The creek above the pond runs for a over a quarter of a mile over a fine sandy bottom as a stream 6 in. to 12 in. in depth. Thence it goes onward for another half mile or more through a cedar swamp, being crossed in this distance by a public road. Owing to the swampy character of the cleared land along the creek its whole course is pasture land, and in the warm season the cattle of a number of large farms will have access to the creek. Their manure, added to the swamp muck stirred up by the animals standing in the water, creates a very undesirable, and what may become serious, addition to the natural soluble vegetable impurities of the stream.

4. Above the tract of swamp just referred to is quite a large area, of what is practically the same swamp, but what may be spoken of as the swamp of the head springs, on which, I understand, are the Robinson and Harris farms. This swamp, traversed almost to the head springs, and as the volume of water high up in its course indicates, is the chief source of the water in the creek. It is of importance in considering the question of present and future supply to remember that the high gravelly land all along the course of the creek is permeable and the waters falling on it go down till they reach the hard-pan and appear near the surface, where the clay is near the surface, *i.e.*, in the swampy land all along the creek. All this water, if gathered by perforated tile pipe near the borders of the swampy land being of the same quality as that of the springs as regards purity, coldness, etc., may very properly be calculated on as being utilizable for public purposes.

The area of wooded swamp, of probably forty to fifty acres around the head-springs, must, however, be looked to as the storage reservoir for the great bulk of the future supply of the town, and upon the maintenance of the forest depends in large degree the certainty of the town supply, notably during the warm summer weather.

5. Having stated the results of inspection of the pond and creek your Committee begs now to refer to those conditions in relation to the recommendations of the report of February 24th, 1890.

(*a*) This report states " there would seem to be a certainty that, as far as quantity is concerned, the supply from this source would be ample for every contingency. This, of course, is on the assumption that the sources of supply, *i.e.*, the timbered areas where the springs rise be preserved intact, since, as everyone knows, on their preservation depends largely the continuance of the supply in hot weather. It is further evident that its short course to the pond (where I assume the pumping station would be placed), with a considerable portion of its course through forests, will largely allow its volume to remain undiminished by the great evaporation which takes place from exposed watercourses during the heat of summer, and which accounts for the greatly lessened volume in dry weather of Whiting's creek in its course of five miles."

From what was seen of the destruction of the wood now going on the company has failed to purchase or in any way protect the forest area along the creek, and if the history of other watercourses teaches anything, we must expect a shortage in the supply in a few years, as the town's needs increase. Indeed your Committee finds from a report adopted by the Fire and Light Committee of the town council of Ingersoll last February, that there was a serious shortage of water last winter for nearly a week, owing directly to the fact of the creek in the clear land becoming filled with drifted snow during a great storm, and subsequently freezing up, forcing the town to depend on the Choate pond for supply, which soon gave out.

(*b*) The report adopted by your Board in May, 1890, further contains the following: "The short course similarly lessens the dangers of possible contamination, which dangers can, however, be guarded against only by the company acquiring the right to protect the stream, both at its source and along its course."

From what has been stated with regard to the open pasturage along almost the whole course of the stream, and the abundant evidences of cattle being and having been along the banks and in the creek, it is plain that the company has taken no steps whatever to protect the stream along its course, as suggested in this paragraph.

(*c*) The report further states: "I would advise in this case, however, and much more in the event of the Whiting creek being selected, that the water be taken from an ample well supplied from a point in the creek above the pond, and that a proper arrangement of filter-bed be made for upward filtration, whereby the suspended matters may be removed with a portion of the soluble organic matter, and that the well, made of concrete, be maintained as a settling basin, which, by a compartment arrangement, would make a cleansing of it as often as necessary, easily possible."

The complete absence of any basin for sedimentation, of any alternative provision for pumping from the same while cleansing, and of any attempt to free the water from suspended impurities, along with the remarks made in the quotations in (*a*) and (*b*) evinces, on the part of the company, a neglect to carry out what would seem to be the principal conditions entering into the agreement between the corporation of the town of Ingersoll and the Ingersoll Waterworks Company.

In concluding this report it does not seem improper to add one or two remarks as to what the present condition of the Ingersoll water-supply demands.

1st. It demands the immediate purchase of the land surrounding the head-springs and the maintenance of the forest thereon.

2nd. Either the immediate protection of the whole course of the stream from pollution by cattle or other cause, or what will probably be more economical and more sanitary, viz., the extension from the pumping station to the creek on the wooded land of the head-springs of a glazed tile or iron pipe, thereby carrying the pure water, while cool, underground, and so preventing the untoward effects of a water containing a natural excess of vegetable matter becoming heated and undergoing decomposition.

Recommendations.—In formulating conclusions based upon its investigation, your Committee is of the opinion that the following measures are necessary in order that the terms and spirit of the agreement between the town of Ingersoll and the Ingersoll Waterworks Company be carried out.

1. That the aqueduct tile pipe now under the pond be all taken up and replaced by an iron pipe of best quality, with joints made tight, as proved by a test, or that tiles be laid from the pumping basin on the land direct to the engine-house, and that the tube leading to the pond be closed by a valve, the key of which is in the hands of the Chairman of the Water and Light Committee or of the mayor.

2. It demands the immediate purchase of the land surrounding the head-springs and the maintenance of the forest thereon.

3. Either the immediate protection of the whole course of the stream from pollution by cattle or other cause, viz., the extensions from the pumping station to the creek on the wooded land of the head-springs of a glazed tile or iron pipe, thereby carrying the pure water, while cool, under ground, and so preventing the untoward effects of a water containing a natural excess of vegetable matter becoming heated and undergoing decomposition.

4. That as the very large extent of swamp land along the creek adds materially to the amount, the character of the water will be better the nearer it is taken to its point of exit from the gravel beds lying on top of the clay subsoil.

All of which is respectfully submitted,

J. D. MacDONALD,
P. H. BRYCE,
Committee.

Toronto, May 3rd, 1894.

REPORT ON THE CANADIAN PACKING ESTABLISHMENT OF LONDON, ONTARIO.

By P. H. Bryce, M.A., M.D., Toronto.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—Owing to several communications from the London Board of Health relating to the existence of a nuisance in London township, caused by the Canadian Packing Company allowing the effluent water from their factory to pass into a creek passing through a number of farms, along which cattle feed, the milk from which is sent to London, I visited the establishment on October 12th, in company with Dr. Hutchinson, Medical Health Officer of London, and Mr. McLaren, a resident farmer along the creek.

We found the factory a large one, having a capacity for killing from 800 to 900 pigs daily, and dealing with them after the methods of the most approved modern establishments. The Company is managed by gentlemen and employees from Denmark, and exhibit in every way the high intelligence which characterize their nation in practical commercial matters.

The pigs used are wholly Canadian and are brought to the factory by the Grand Trunk and Canadian Pacific railways, it being placed conveniently in an angle between the two tracks.

The buildings are wholly of brick, with stone pavements, and the pens where the temporary supply of pigs is kept, are admirably arranged, so that the floors can daily be washed down with water supplied by steam pumping.

The slaughtering-room, the trolleys, furnace, the packing-room, salting-room and ice-room are of the most modern and improved description.

All the products of the animal, even to the hair and hoofs, are used, the blood, manure and refuse being daily removed to the Provincial Asylum farm adjoining, and yields a profit to the factory of one cent per hog killed.

The complaint, as already stated, is said to be due to the wash water from the floors; whether from the pens or after slaughtering, reaching the creek already referred to.

When begun, the effluent water was carried by a tile drain directly to the spring creek. It is hardly necessary to say that with the daily use of 10,000 to 15,000 gallons of water more or less contaminated with blood, etc., a very serious nuisance soon resulted from this contamination of the creek.

The factory has been in operation some two years, and in 1893 the attention of the local board of health of London township was called to the matter.

It appears that the Company has a permit from the township council, but parties along the stream at the time when the permit was issued spoke of the possible contamination of the creek. They were given to understand that any nuisance possible, would be prevented by the management. After sundry complaints, to which the Company at first took no notice, complaints were formally made last year, and legal advice called in. The Company promised compliance with the Health Act, and to this end instituted a method of sewage disposal similar in principle to that established at the London Asylum.

The rough diagram herewith submitted illustrates the system.

The drains from the slaughter floors and rooms, where the entrails, etc., are treated, lead to a stone tank, where a certain amount of sedimentation takes place. Thence the drain runs to three ditches, each 6 feet wide by 300 feet long, situated on the declivity, one higher than the other. Each is about 6 feet wide and arranged to hold water to the depth of about 6 inches. If all full they hold about 15,000 gallons. They are so far as possible used alternately, the soakage of the higher being toward the lower, and the lower being toward a small area on a still lower level near the creek. This again is separated from the creek by a dike of earth. Under each ditch is laid a three-inch field tile, and over this what is stated to be 6 inches of sand.

At the time of my visit, ditches 2 and 3 were in use, killing having gone on, on the 11th and 12th, some 1,500 hogs having been killed. The upper ditch was practically dry, and was used three days before, and is now ready for the next killing. We were informed that the surface of the ditches is raked each time to prevent the pores of the soil becoming choked.

At the eastern or farther end of the ditches a narrow surface ditch leads to the flat below the declivity, and there was a considerable area, about one-sixth of an acre of flat-bed, covered with dark water, it being prevented from flowing into the stream by perhaps six inches of higher earth. It reached within ten feet of the creek.

On enquiry, and as was apparent, the lower level was being utilized where the water in level ditches above, rose to say, higher than six inches. A steady but small stream was flowing at the time of our visit, at 4 p.m., from the ditches to the lower levels.

It will be seen from this description that it only requires an excess of water to pass beyond the present filtering capacity of the beds, flats, etc., and to pass directly into the creek.

This, according to the statement of Mr. McLaren, took place on September 11th, after a rain, when the creek on his farm a mile down stream was polluted, the smell from it being offensive and noticeable some distance from the stream. Several times since then the same results, but less, have occurred.

Last winter when the drains, I understand, were not completed, contamination was almost constant; and with the colder weather and rains of autumn and the frost of winter, it is feared this will again occur.

The lessened capacity of the drains for filtration in winter owing to cold, rain and the cold water, thus different from sewage, makes such dangers well founded, and I have therefore to make the following recommendations:

1. That in receiving tank from building, a compartment be made wherein by a ┌ tube, the fluids from No. 1 may be drawn off into No. 2 from beneath the surface, thereby still further separating the water from the floating fat, etc.

2. That the solids from compartment No. 1 be removed at least, weekly.

3. That the broad ditches be increased in extent along the border of the hill, so that a third of the ditches will be adequate for receiving a whole day's effluent. By this means the other ditches will have a longer rest. If this be still not sufficient, yet more ditches will be required.

4. That in order to ensure more rapid filtration the tops of the ditches be more frequently loosened by rakes and hoes, and that three rows of field tiles be laid under the sand of each ditch for aiding rapidity of filtration.

5. If owing to the cold water of the effluent in winter, the ditches, sufficient for warm weather even if there be continued rains, should prove insufficient, it will be necessary to deliver the effluent by several four-inch or five-inch tiles laid at a few inches beneath the surface levels of the beds, so that snow in the ditches will not disturb, while radiation of the heat of the effluent will be prevented. Snow on the surface of the ditches would then become heat-retaining, acting like a blanket.

6. That the local board of health of the township be instructed to have these or any other equally efficient measures carried out, and that the continuance of the permit which the business has from the township council, be dependent upon the Company's keeping all unfiltered effluent from the stream both in summer and in winter, in dry and in rainy weather. With care by embankments, surface rainfall can be kept from draining into the ditches.

All of which is respectfully submitted,

Toronto, October 13th, 1894.

PART III.

BELLEVILLE.

BELLEVILLE, ONT., December, 1894.

To His Worship the Mayor and Members of the City Council:

GENTLEMEN,—I have the honor of presenting the following report for the year ending November 30th, 1894.

The mortality for the past year has been very low, no doubt owing to the extra sanitary precautions taken.

The Sanitary Inspector and his assistants made a careful house-to-house inspection of the city during the months of May, June and July, and at other times on complaint of any nuisance existing. He reports the city in a fair sanitary condition, but would suggest to the council that the Pig By-law be amended so that no ratepayer should be allowed to keep pigs on Front or Pinnicle street, from Tickell's factory on Pinnicle street to Dundas street, a recommendation in which I heartily concur. The cellars on Front street near the market square have all been placed in a good sanitary state, and with a drain from Hotel to the upper bridge Front street would be in a first-class condition as regards drainage. But I cannot say as much for the roadbed. Front street, in my opinion, has been a disgrace to the city this past spring, summer and fall. I drew the attention of the council last year to the necessity of having it cleaned oftener, but no action was taken. It should, in my opinion, be cleaned at least once a week, and some other material used in its construction.

The city has been pretty free from infectious diseases. I have only had some thirteen cases of typhoid fever reported during the year, with no deaths. Thirty-seven cases of scarlet fever and two cases of diphtheria. The houses were promptly placarded and proper precautions taken to prevent its spreading. The scarlet fever cases were, in two instances, contracted in Montreal, and in a third case was contracted in Toronto. I have been notified of three cases in patients coming from Chicago, a place infected with smallpox. In all cases the notice is by postal card, which I did not receive until the parties had been here, in two cases, forty-eight hours before I received the notice, and then the notice was so vague that if the party had been exposed or contracted smallpox it would have been of no use to have them. It simply said, Mr. So and So is on his way to Belleville from Chicago, a place infected with smallpox. The notice should, in my opinion, give name, address, street number, trade or occupation, and, to be of any use, should reach its destination before the party, so that someone could meet and see him, and be able to keep him under notice. I have sent out one hundred and eight notices for the statement of nuisances, have inspected a great number of places myself, and had a general supervision over the sanitary state of city. I noticed that in nearly all the cases of typhoid fever the parties used water from wells, and think the time has arrived for the doing away of the so-called public wells, at least those which are on the streets, for no matter how often or how careful the authorities may be from their position, they cannot help but be a source of danger from contamination, from surface drainage, etc., to those using them. The slaughter-houses are now all out of the city limits, which is a source of gratification to those who formerly lived near them. The Bridge street sewer has been completed and is of great importance to those living on that street, but the mouth of the sewer will have to be covered over, and the sewer extended to running water, or I am afraid it will be a nuisance to those being near it, on Front and Bridge streets especially. I trust the council will not allow the Catharine street drain to be used as a sewer by those living in that locality. If so, the nuisance caused by it during low water at the foot-bridge will be unbearable.

I have the honor to be,

Your obedient servant,

R. TRACY.

M. H. O.

BRANTFORD.

To the Chairman and Members of the Brantford Board of Health:

GENTLEMEN,—I have the honor to present the following report on the sanitary condition of the city of Brantford for the year from November 1st, 1893, to November 1st, 1894.

Mortuary Statistics.

The number of deaths in the city during the year was 202, giving a death-rate of 13.03 per 1,000, in a population of 15,500.

In 1893 the deaths were 213 and the rate 13.83.

In 1892 the deaths were 221 and the rate 14.03.

The causes of death were as follows:

Scarlet fever	23
Consumption	20
Cholera infantum and diarrhœal affections	18
Heart affections	15
Pneumonia	10
Cancer	7
Kidney diseases	9
Deaths from injuries and drowning	7
Diphtheria and croup	5
Typhoid fever	3
All other causes	85

Seventy were under 5 years of age, 36 over 60, and 7 over 80 years of age.

Typhoid Fever.

The number of deaths from typhoid fever was three, the number of reported cases of this fever was 52, of which a considerable number were very mild.

In 1893 the deaths from typhoid fever were four and the cases reported were 49.

In 1892 the deaths were two and the reported cases 55. In the five years preceding 1892, 475 cases were reported and 51 deaths, averaging 95 cases and 10 deaths per year.

Its Relation to Well Water.

In my report last year I stated that of the 49 cases reported, 46 used well water and only three city water, and that the four fatal cases were all users of well water, and that in all of the four cases the wells were bad.

I have this year personally investigated every case of fever with great care, and as can be seen in the books of the health office, of the 52 cases reported, 49 were habitual daily users of well water and four only used city water.

Twenty-six of the wells where fever occurred have been complained of as not being in a good state and the remainder are badly situated as to the danger of contamination. All of the three fatal cases used water from bad wells.

It thus appears that during this year as during the last, while nearly one-half of the people used city water and the other half well water, substantially all or nearly all the fever occurred amongst the drinkers of well water.

Of the 52 cases of fever 41 occurred in the months of September and October. They were drinking well water, and owing to the previous drouth the wells were then very low and were in their most dangerous condition, having the largest percentage of filth.

Owing largely to this cause most of the fever in Brantford occurs in the autumn and the cases thus coming together excite marked attention.

This autumn the hospital having been recently made practically free to the whole medical profession and the public, the proportion of fever patients resorting to the hospital instead of being treated at home has been much larger than heretofore, out of the 52 cases 30 having been treated there.

When to these 30 there were added eight cases of fever from the county, outside the city, it will be understood that the small hospital would be for a time in the autumn half filled with fever cases and the idea of much fever prevailing would arise.

Great Reduction in the Amount of Fever.

It will be seen from the above stated facts that this idea* is entirely unfounded, the actual typhoid death-rate having been less than 20 per 100,000 as compared to the old rate of 70 to 90 per 100,000, a rate which to-day exists in many cities with contaminated water supplies.

It is, however, also a reasonable inference from the facts that the disease might be much further reduced, in fact that it might practically be made to disappear from amongst us. Substantially it may be said that in recent years no one has contracted typhoid fever in Brantford except drinkers of bad well water or those who have taken it more or less directly from them, and this accords with the experience of other places.

Necessary to Abandon Wells.

When the citizens of Brantford entirely discontinue the use of water from contaminated surface wells, which are the present water supply of half the population, or in those cases where this may be impracticable, never use such water unless it has been boiled. Then assuming that our milk supplies are scrupulously guarded from a like contamination, we may expect that cases of typhoid fever will be few and far between. Otherwise I do not think we may look for any further reduction in the amount of typhoid fever; in fact in unfavorable seasons there will probably be a material increase.

Deep wells drawing their supplies from below a stratum of clay and thoroughly protected from the possibility of surface drainage may be considered safe, but unfortunately in Brantford there are few if any such, the wells are really surface wells. Even of those which are very deep I am not aware of any which are so constructed as to effectually prevent surface drainage.

Greenwood Cemetery.

The relation of Greenwood cemetery to this subject is, to say the least, a matter of serious anxiety and apprehension. I am not in possession of any evidence of actual contamination of wells from that source, or that the wells in the drainage area which includes the cemetery are any worse than the wells in other areas, but there is at least a constantly impending danger from that source to the wells in a large area, a danger of putrefactive contamination and of contamination of specific disease. I regard this as the chief danger to which we are exposed by the position of the cemetery, a danger which should be met by the absolute abandonment of all wells in that area.

Public Water Supply.

In view of the exceptionally unsafe character of most of the wells in Brantford and of the serious danger to which the public health is thereby exposed, it is highly satisfactory to know that we have the means at hand to avoid these dangers in large degree in our public water supply, which not alone by scientific examination, but by our practical experience, is shown to be of excellent quality and ample for all possible demands.

The number of premises using city water is now 1,770, of which 167 were supplied this year. There are about 1,820 wells in use and about 250 not in use, the water being too bad to be used.

This board has hitherto been unwilling to compel the abandoning and filling up of wells except in a few extreme cases. The work of putting in city water has been thus far almost entirely voluntary on the part of the people. There are hundreds of wells that are so obviously bad or so dangerously situated as to contamination that it is quite within the powers of this board to order them filled up and I think these powers should be used to their full extent.

As for the rest, the city council has power to close them all, or close them all in certain sections or areas, but it should not be expected to do so unless it is the wish of a large majority of the citizens. If public sentiment is not strong enough to call for the general abandonment of our surface wells, either impure or unsafe as they are shown to be, then on the public must rest the responsibility for the sickness caused by them.

Scarlet Fever.

In my last year's report I stated that an epidemic of scarlet fever was then present and causing much apprehension. I regret to say that apprehension proved well founded.

There were during the year 149 cases of scarlet fever and the high mortality of 23 deaths; in the previous year there were 144 cases and five deaths. During the present month of November there were no reported cases in the city until the 25th, when four cases were reported.

The fact that a child may have mild scarlet fever in its earlier stages without showing any signs of illness and may attend public school and Sabbath school and contaminate many others before it is known to be affected, makes it extremely difficult to control this disease. The difficulty is increased by neglect of notification and actual concealment in many mild cases.

While the average citizen regards it as criminal negligence of the health officers if the children of other people are not rigidly quarantined, he neverthelcs usually resents any restraint of his own children as unnecessary and arbitrary. In view of the serious danger of a large amount of scarlet fever and diphtheria this winter I think a strict enforcement of the Public Health Act in all its provisions with regard to contagious disease is urgently required.

Diphtheria.

There were 36 cases of diphtheria and its allied affection, membranous croup, reported during the year, of which five were fatal. In the previous year there were 114 cases and 16 deaths, and there are at the present time no cases reported. The year has therefore been very fortunate as to this disease. There have been in years past, in and about this city, many epidemics of diphtheria, more or less widespread and malignant, not infrequently fatal to nearly a whole family. Happily such has not lately been the case, but the danger of this alarming disease breaking out with severity is to be feared, especially as it is raging with great severity in several other places.

Antitoxine.

To what extent we may be able by the use of the new agent, antitoxine, to prevent or cure this dread disease, has yet to be seen, and it is perhaps well not to expect too much, but there does not seem to be anything more unreasonable in discovering an agent which should confer immunity to diphtheria than in the discovery of vaccine, which has given us a practical immunity to the more loathsome and dreadful disease, smallpox. The mortality from diphtheria is to-day 100-fold greater than that from smallpox, and the beneficent results of a discovery, if such be establised, of an agent which may be as potenc an antidote to diphtheria as vaccine has been to smallpox, are incalculable.

With the advice of the Committee on Contagious Diseases, I have made one of the first applications for a supply of antitoxine, and as soon as such shall be available it will doubtless be received. I recommend that this board authorize me to obtain a sufficient supply of antitoxine to be furnished at absolute cost to the physicians of the city, and in urgent cases to be gratuitously used for the poor.

Isolation Hospitals.

To have any effectual control over epidemices of scarlet fever and diphtheria it is necessary that there should be some means of isolation. In the private houses of wealthy people it may be possible to secure satisfactory isolation but in the cases occurring in small and crowded tenaments, where many of the worst epidemics arise, and in hotels and boarding houses, and in the cases of domestic servants and many others, isolation is not possible. In many large cities separate isolation hospitals are maintained, at a necessarily great expense. In many others annexes or isolation wards are attached to hospitals, a good example of which is to be seen at Guelph. The annex which has been recently erected there at a very moderate expense, perfectly answers its purpose and has given rise to no objection whatever from any source, and the additional cost of running it in connection with the general hospital is very small.

The late Mr. John H. Stratford, the founder of the hospital, was about to erect such an annex at the time of his lamented and untimely death, the medical staff of the hospital have unanimously approved of it, and the people of Brantford want it and need it. The increased demand for hospital accommodation due to the hospital having been recently opened, by the present board of governors, to the whole medical profession and their patients, will make increased accommodation necessary. But it may safely be asserted that the feeling of the people of Brantford who have any knowledge of the matter is that any appropriation which may be made to enlarge the hospital should be first applied to meet the imperative necessity of providing for these cases of contagious affections, which next to accident cases, are more necessary to be considered than any other, and without provision for which it is impossible to deal with the most dangerous and fatal diseases which afflict the community.

Smallpox and Vaccination.

For a length of time smallpox has prevailed in Detroit on the one hand and Buffalo on the other. Its recent occurrence in Michigan and at two or three points in western Ontario, and within the last few days at Strathroy, show that the danger of its further spread through Ontario is very imminent.

Until this summer scarcely any vaccination had been done in Brantford since 1885, the great mass of school children were unprotected. In view of this dangerous condition this board at its May meeting directed me to undertake the work of securing a general vaccination. A continous supply of fresh vaccine was obtained and furnished at actual cost to all physicians desiring it, and I personally vaccinated free all who required it. I am glad to report that this work has been most thoroughly done. I have vaccinated at the Health office nearly 700 children, about 650 of whom were free of charge, and I estimate that nearly 2,000 children were vaccinated by other physicians in the city. The whole net expense to the city of this most extensive vaccination will be about $35.00. All of the vaccine was perfectly fresh from the heifer. The vaccinations were all but universally successful and the number of cases were exceedingly few in which there were inconvenient after effects.

Milk Supply.

The number of dairies at present supplying milk to the city is 22 and the number of cows is 347. The daily supply delivered by the wagons is estimated at 2,400 quarts, the last testing of 13 samples on November 9th, showed an average percentage of butter-fat of 3.75, and no one of the samples was poor milk. The specific gravity at a temperature of 15 centigrade and percentage of butter-fat in the 13 samples was as follows : T. Spencer, supplied by Brooke & Son, specific gravity 10.33½, butter-fat 3.25 ; N. D. Foulds, 10.32 and 3.70 ; T. Birkett, 10.33 and 4; James Lee, 10.33 and 3.20 ; James A. Willis, 10.32½ and 3.20 ; J. Frankland, supplied by R. Greenwood, 10,33 and 3.60 ; N. D. Foulds, supplied by Wisner, 10.33½ and 3.95 ; W. D. Snider, 10.32½ and 3.90 ; S. K. Passmore, 10.33 and 4 ; George Williams, 10.32½ and 4 ; J. Rolfeson, 10.33½ and 4.20 ; I. Beal, supplied by G. C. Cradoch and A. B. G. Tisdale, 10.31½ and 4.20 ; R. Porteous 10.33½ and 4.20.

Every one of the 22 dairies was inspected and all were found in a fairly good and wholesome condition, and no diseases were discovered or reported amongst the cattle. From one of the dairies, however, all of the milk is disposed of in bulk daily to a dealer in the city. A mild case of typhoid fever was reported at the house of this dealer. The physician in attendance had ordered the well water not to be used by the family unless boiled. In company with the Sanitary Inspector I visited these premises and found that all the milk cans were daily washed at this well, 160 families were therefore daily exposed to risk of disease from this one contaminated well. I cite this case to show the necessity of a constant vigilant supervision of the milk supply of the city. The use of this well was at once prohibited and city water has been put in.

Sanitary Inspection.

Last year owing to the threat of cholera, a thorough general inspection covering 3,375 premises was made. This year the inspections have been limited as in former years to premises where contagious diseases, numbering 237, were reported to exist, and to premises as to which complaints were made, numbering 193, in all 430.

The importance of having house-to-house inspection is so great that I hope we may hereafter be able to have a complete inspection every year. The work of the Sanitary Inspector has included, beside the inspections above referred to, the inspection of the market ; the periodical inspection of the slaughter houses, against which there have been no complaints this year, and the inspection of all the dairies ; the notification of schools and libraries of 185 cases of scarlet fever and diphtheria ; the serving of 31 sewer connection notices and the inspection of dumping grounds.

Twenty-four cases of infraction of the Health Act were brought into court. In eleven cases convictions were obtained, and the amount of fines paid was $128.80.

Garbage Removal and Dumpage.

I have in several previous reports urged the necessity of a more thorough and systematic system of garbage removal. The large unused area of the canal basin in the heart of the city and several other places not likely ever to be used for the erection of dwellings are convenient places and will be for a generation to come, for the deposit of all refuse, except for decaying vegetable and animal refuse. For the disposal of this refuse in most cities, a large expense is incurred. In Brantford no systematic attempt has been made to deal with this matter, and no expense has been incurred in connection therewith.

Two or three carts employed by the Board of Works continually in this service in the more crowded parts of the city would accomplish much and would entail a comparatively small expense, as they might be employed also in the periodical street cleaning work. The importance of this work in relation to public health, and especially in relation to scarlet fever, diphtheria, measles, etc., is such that I trust there will be no further delay in regard to it.

There has been less complaint this year with regard to the closet dumping service of the city contractor than for many years. In most cities this service is a source of great difficulty and constant complaint and litigation.

In Brantford the closets are mostly dry earth closets and the trouble is less than in any other city within my knowledge. Any complaints that have been made might easily have been avoided had reasonable care been used by the contractor, and he must be held to a strict account for such complaints.

Conclusion.

The sanitary condition of Brantford which eight or ten years ago, was well known to be bad and steadily retrograding so much so as to excite comment throughout the whole county, has much improved in almost every way during the last few years.

This improvement is apparent in the general amount of sickness : in the annual death rate; in the amount of typhoid fever ; in the amount of diphtheria and cholera infantum ; and only with regard to scarlet fever during the last year, has it been unsatisfactory.

The principal factors contributing to this satisfactory result are, an excellent public water supply ; an all but perfect system of sewerage and plumbing, so far as they have been utilized ; the abolition of nearly 2,000 underground soak pits ; an excellent hospital ; a thorough system of dairy inspection and milk testing ; and a complete system of notification of schools and libraries as to contagious diseases.

All of these were imperatively necessary for the convenience of the health and the reputation of the city, and they have been obtained at a remarkably moderate cost compared with similar works elsewhere. Brantford is now in a position in consequence of wise and moderate investments for these purposes, if she chooses fully to utilize them to obtain the very first rank as a wholesome, healthy city. To accomplish this result the work so far advanced must be fully completed. Enforcement of sewer connection and extension of sewers in certain localities, establishment of an efficient garbage service, more thorough enforcement of the law as to notification of contagious diseases, are some of the things required, but most important of all is the abolition of all surface wells, and ensuring to the whole population instead of merely to half of it, as at present, an ample supply of pure and wholesome water.

(Sgd.) EGERTON GRIFFIN,
Medical Health Officer.

BRANTFORD, Nov. 28th, 1894.

HAMILTON.

HAMILTON, ONT., 5th November, 1894.

To the Chairman and Members of the Local Board of Health :

GENTLEMEN,—I beg to submit my annual report for year ending 31st October, 1894.

The mortality of the city has been slightly in advance of the previous year, there being a total of 790 deaths of citizens ; males 397, females 393. Estimating the population at 50,000, the death-rate will be 15.8 per 1,000, against 14.58 last year. Either rate shows a very satisfactory condition.

Fifty-six cases are stated to have died in the City Hospital, 16 in St. Joseph Hospital and 11 at the House of Refuge.

A very large number of cases of diphtheria have been reported during the year. I can only impute the increase to negligence in proper isolation. In every instance the inspector when posting a placard informs the occupants that they must not mingle with the general public without permission. This order has been generally disregarded as far as the health office is concerned, as the Health Act gives the same power to the attending physician, who can regulate under what conditions he may or may not allow them to do so.

Three hundred and eighteen cases of diphtheria with 67 deaths have been recorded, 134 cases of scarlet fever with 2 deaths, and 124 cases of typhoid fever with 6 deaths. Cases have been sent to the hospital long before the health office has been notified, and in some cases no notice has been given. In all cases it is the duty of the medical attendant to notify, and the householders in which such cases occur are also required to do so. Three children in one family are said to have died of inflammatory croup, a few days' interval between the cases. To avoid the errors of diagnosis, I would suggest the propriety of having all forms of croup placed in the category of contagious diseases and have the houses placarded as diphtheria. I also notice that cases of diphtheria have been taken from Hamilton for burial without permission from the health office. I am, however, of opinion that due care has been observed to prevent the spread of the disease, yet it would always be advisable to have permission granted to do so. Speedy burials are always advisable, and the rules of the Provincial Board of Health to guard against contagion should be carried out.

I append extracts taken from Medical Congress held in Germany, which might prove instructive to the public. Many of them have long since been given, but coming from abroad may be productive of better effects.

Respectfully submitted,

J. RYALL,
Medical Health Officer.

Year 1893-4.	Hamilton cemetery.						Roman Catholic cemetery.						Outside burial grounds.					
	Total burials.	Non-residents.	Still-born.	Citizens.	Males.	Females.	Total burials.	Non-residents.	Still-born.	Citizens.	Males.	Females.	Total burials.	Non-residents.	Still-born.	Citizens.	Males	Females.
November........	45	8	2	35	17	18	13	....	....	13	6	7	5	....	....	5	4	1
December	89	16	3	70	33	37	17	....	....	17	5	12	12	2	1	9	5	4
January..........	73	14	4	55	23	32	21	1	....	20	10	10	11	....	....	11	4	7
February	54	10	1	43	26	17	20	3	....	17	4	13	7	....	....	7	2	5
March	51	7	3	41	24	17	17	2	....	15	11	4	8	....	....	8	3	5
April	62	9	2	51	26	25	7	....	....	7	2	5	5	1	....	4	....	4
May	54	4	8	42	22	20	14	....	2	12	7	5	7	....	....	7	5	2
June	48	9	1	38	16	22	10	....	1	9	4	5	3	....	....	3	3	....
July	45	10	2	33	17	16	20	....	....	20	10	10	7	....	....	7	4	3
August	56	6	3	47	25	22	20	1	1	18	11	7	9	....	....	9	4	5
September	56	10	3	43	23	20	18	4	1	13	7	6	12	1	....	11	6	5
October	44	7	2	35	19	16	8	....	....	8	3	5	8	1	....	7	6	1
Totals........	677	110	34	533	271	262	185	11	5	169	80	89	93	5	1	88	46	42

Distribution of Principal Contagious Diseases by Wards.

——	Wards.							Total.	Deaths.
	1.	2.	3.	4.	5.	6.	7.		
Diphtheria	36	13	26	33	26	52	132	318	67
Scarlet fever......................	4	12	44	27	7	15	25	134	2
Typhoid fever	25	13	11	26	12	12	25	124	6
Smallpox	......	......	1	......	3	3	3	10	....

Smallpox. Two cases were reported as chicken-pox, and the original case was not reported, but was regarded as chicken-pox by the physician, who took the disease from his patient.

KINGSTON.

To the Chairman and Members of the Local Board of Health:

Gentlemen,—I have the honor to submit the annual report of the sanitary condition of the city of Kingston, for the year ending December 28th, 1894, in accordance with the provisions of the Public Health Act.

Having examined the statistical reports, I am much pleased to be able to report that the general health of the city is improved and is much better than it was last year, as is evidenced by the fact that there were thirty-four cases more of infectious disease reported in 1893 than in 1894.

The following is the number of cases reported this year, viz.:

Typhoid fever	54	cases.
Scarlet "	24	"
Diphtheria	26	"
Smallpox	1	case.
Measles	1	"
Total	106	

In this connection I would call the attention of the Board to the fact that out of the fifty-four cases of typhoid fever reported for the year forty cases occurred previous to the 26th of March about the time the intake pipe of our water supply was connected with the outer section, clearly showing, to my mind, that the water supplied to the people was a very important factor in the cause of the number of typhoid fever cases that occurred in past years. In the future, however, we may reasonably expect to have few cases of this disease in the city, as the quality of the water supplied has been very greatly improved.

With regard to the case of smallpox which occurred in May last, I may state that your officers were called upon to provide necessary accommodation in the Military Hospital, which is located outside of the city limits. I am pleased to say that, owing to the prompt action taken by the Board, the disease was completely stamped out.

Taking all things into consideration it is gratifying to know that the present year has been marked by satisfactory progress in sanitary improvements, including the construction of sewers in James, Montreal, Barrie and Collingwood streets.

The construction of the sewer in Collingwood street is a very important work, as it gives an outlet for the drainage of all the western part of the city, which was very much needed.

There have also been a great many subsidiary sanitary drains constructed which have been duly appreciated by the people, and gladly taken advantage of by this department in effecting the removal of unsanitary conditions and, in some localities the abatement of unmitigated nuisances.

The frequent and thorough flushing of the sewers in dry weather is absolutely necessary for the preservation of the public health, but as many of our sewers are constructed of stone it is impossible to flush them in the way it should be done in order to accomplish the desired results, therefore I would strongly recommend that they be condemned by the Board and proper sanitary sewers be constructed in their stead, in accordance with the provisions of the Public Health Act, which permits the council, by a two-thirds vote, to rebuild drains condemned by the Board of Health, and charge the cost of the work to the owners of the property along the line of streets in which the sewers are constructed.

The scavenger system, organized to effect the removal and disposal of household refuse and yard cleanings, gave general satisfaction during the past year.

The odorless system of removing night soil, which was established in 1885, under which four scavengers are employed in carrying on the work, has resulted beneficially to the citizens, both as regards comfort and cost. The work is now well done, for in no case is a privy pit opened without being thoroughly cleansed and lined.

I would again bring to the notice of the Board the matter of the removal of manure through the city. There are no regulations regarding it, and as a consequence manure is being carried in unsuitable vehicles which permit portions of the loads to fall upon the street, to be ground into dust and blown into houses, much to the detriment of the public health. The Board has already recommended the Council to deal with the matter, but as no action has been taken as yet by that body I would ask the Board to urgently press the question until a by-law is passed in the premises.

I would also bring to your notice the necessity of regulating the removal of kitchen refuse, offal, etc. It is now largely removed by private individuals in receptacles very unsuitable for the purpose.

The City Council not having passed regulations governing baby farming, and as such are urgently needed I would ask the Board to again press the matter upon the Council until rules are adopted that will give the authorities full control of such institutions.

(Sgd.) SAMUEL H. FEE, M.D.,
Medical Health Officer.

KINGSTON, December 28th, 1894.

LONDON.

REPORT OF THE MEDICAL HEALTH OFFICER.

To the Chairman and Members of the Local Board of Health:

GENTLEMEN,—It gives me pleasure to state that the public health during the year has been unusually good. The sanitary condition of the city has also been good. There were fewer deaths from infectious diseases than last year or any former year. Comparatively few infants or children died, the deaths being chiefly among the aged and those past the noon of life. There was a gratifying absence of the usual summer complaints of children—such as cholera infantum. This is due, in my opinion, to the improved quality of milk supplied to the city, and which enters so largely into the food of infants and children. The milk offered for sale in this city shows an average higher percentage of butter-fat and is also cleaner than for several years. No epidemic visited the city. Smallpox, although in one or two neighboring towns, has not yet reached London. Its proximity had, however, a stimulating effect upon vaccination, a considerable number being vaccinated by the physicians of the city.

The very proper regulation of the board of Education requiring all children who have not been successfully vaccinated, to have that done before entering school, has been carried out. Those who were unable to pay the fee for vaccinating their children have had this done at the health office without charge. The death returns made to the city clerk are not accurate, and under the present method of collecting mortuary statistics never will be. The death rate, therefore, can only be approximately estimated. The population of the city according to the assessment commissioners' returns, has increased during the year to 33,427. The total number of cases of infectious diseases reported at the health office, including those sent to the city and St. Joseph's hospitals, was 215, classified as follows, viz.: Typhoid fever, 43 ; diphtheria, 130 ; scarlet fever, 34 ; measles, 8. Of this number 67 cases were treated at the city hospital, viz.: Typhoid fever, 14 ; scarlet fever, 3 ; diphtheria, 50, with only five deaths from the latter disease ; 45 cases were attended to in St. Joseph's hospital, viz.: Typhoid fever, 24 ; scarlet fever, 2 ; measles, 8, and diphtheria 11, with no deaths.

Typhoid fever, a disease originating in filth, impure water and contaminated milk, shows great improvement over former years, and is in great measure due to the better sanitary condition of the city, and where wells are used a consequent purer supply of water. It is gratifying to state that the citizens of London are realizing the fact that immunity from preventable diseases is only obtained by prompt removal or complete destruction by fire of all organic refuse matter. To the growing popular interest in sanitary work, the gradual abandonment of unsafe well water for that provided by the city, and a wholesome supply of milk, is due to a great extent the small number of deaths among children and young people during the year. Although the large number of 130 cases of diphtheria were reported, there were comparatively few deaths from the disease. The most efficient means of preventing the spread of the two diseases—diphtheria and scarlet fever—is a rigid system of quarantine and isolation. In many cases the occupants of the dwelling, where the infectious disease is, willingly do all they can to carry out these requirements, but in some cases it is very difficult to enforce a strict quarantine without the aid of a patrol. Those who show indifference to comply with the directions given by the medical attendant or health officer, are followed up in order to see that the quarantine regulations are carried out as directed. One of the most efficient means of spreading these diseases is through the public school. A child is taken ill with some slight affection of the throat which is not deemed of sufficient severity to require the services of a physician. After being kept home for a few days or a week, the child is allowed to return to school, and then spread the disease. It should be remembered that a mild form of an infectious disease in one child is capable of producing in another an extremely fatal type.

Sanitary Inspections.

As soon as the frost was out of the ground in the spring a systematic and thorough inspection of all premises, yards, shops and lanes in the six wards of the city was made by the sanitary and assistant sanitary inspectors, and the work was well and thoroughly done by the 29th of May as follows: Premises visited, 7,340; closets reported not clean, 2,168; yards reported not clean, 363; cess pools reported not clean, 17. The majority of householders showed a laudable desire to clean up and comply with sanitary requirements, but in many instances a second visit was necessary by the sanitary inspector to see that the work had been properly done. Seventeen wells were examined, of which three were found good and fourteen bad. Some of these were cleaned, the remainder closed. Nineteen closets were caused to be removed, and others connected with the water system put in.

Ice Supply.

The regulation prohibiting the sale of ice taken from the Cove and south branch of the Thames, except for cooling purposes only has, I believe, been faithfully complied with by the ice dealers of the city, that cut from the north branch, above Saunby's dam, being allowed for domestic use.

Milk Supply.

London is supplied with milk by about 90 dairies, exclusive of private supplies. With the exception of a few shops where it is sold in the city, these dairies are nearly all in the three townships of Westminster, Dorchester and London. Changes are continually being made, some moving to other places, some giving up business and new ones beginning, which adds very much to the work of inspection. The herds and dairies are inspected twice a year—in the spring and autumn. The spring examination is particularly important, for it is then tubercular and certain other diseases are most prone to develop and more easily detected. Each animal in the herd is examined separately, and anyone suspected of tubercular or other disease is kept under observation until such time as a correct diagnosis can be made. There is a vast improvement in the herds, their condition and cleanliness. Considering the great mortality there is among infants and young children, and that milk enters so largely into their food, the importance of having a pure supply of milk can hardly be estimated. A report upon the inspection of herds, dairies and the quality of milk furnished the city will be laid before your board in December.

House Plumbing.

This is still in the unsatisfactory condition in which it has been for years. With respect to the kind of plumbing and the manner of putting it in, every builder is a law unto himself. There may be no such thing as cheap plumbing, but there is some very defective plumbing, and this city has its share of it. This defective plumbing by allowing sewer gas to enter the dwelling, very frequently is the cause of follicular tonsilitis, which predisposes to the germs of diphtheria. The builders and owners are to blame and not the plumber, who puts in the kind of plumbing his contract calls for.

Inspection of Meats.

A careful inspection of meats offered for sale upon the market has been made during this year. *Only one carcase was found unfit for food.*

Our sewer system, which was commenced about the year 1851, is far from being perfect. The first sewer was laid down upon King street and based upon a system for a town of 6 000 or 7,000 people, with no idea that the city would ever grow to its present dimensions. From time to time new sewers have been added to and connected with the old ones. It is, therefore, impossible to have as good a system as it would have been had the original trunk sewers been laid down at the proper levels. Several sewer traps were put in during the year, and the main sewers frequently flushed during the dry season, with the result that few complaints were received of foul gases arising from gully holes.

I have also the honor to lay before you my semi-annual report of the inspections of herds, dairies and the quality of milk supplied the city during the last half of the current year. As will be seen by the report, the quality of the milk never was better. The average percentage of butter-fat of the 92 samples examined is a fraction over 4 per cent. On account of the exceedingly dry weather in July and August, samples of genuine milk went as low as 3 per cent. In

September and October, which were wet months and pasture extremely good, the percentage became high, some samples giving over 5 per cent. of butter-fat. No diseased cows were found, and every inspection shows a growing improvement in the cleanliness and condition of many of the herds.

The following are the names of vendors and quality of the milk, the latter being determined by the percentage of butter-fat contained in a given quantity :

The city hospital. Percentage 5.00. Supplied by James Learn.

C. W. Hourd, Westminster. Herd in good condition and clean. Average percentage of 4 samples, 4.88.

John Wilkinson, Hamilton Road. Supplied by J. Neely. Percentage, 4.75.

J. Neely, London township. Herd in good condition and clean. Percentage 4 50.

Wm. Robb, London township. Herd in good condition and clean. Percentage 4.50.

Jas. Creighton, Dorchester township. Herd in good condition and clean. Supplies Geo. D. McMullen.

George D. McMullen, percentage of two samples, each 4 50.

Wm. Guest, London township. Herd in good condition and clean. Percentage 4.50.

John Griffiths, Westminster. Herd in good condition and clean. Supplies E. W. Gould.

E. W. Gould, percentage 4.50.

Geo. Hawkins, Westminster. Herd in fair condition but not very clean. Percentage 4.50.

Wm. Hill, London township. Herd in good condition and clean. Supplies J. Hill.

J. Hill, percentage 4.50.

Walter Wilkins Dundas street. Percentage 4.50.

John O'Brian, London township. Herd in fair condition and clean. Supplies William O'Brian.

William O'Brian, percentage 4.40.

Edward Fitzgerald, London township. Herd in good condition and clean. Percentage 4.25.

A. Windrim, percentage 4.25.

C. H. Sumner, Westminster. Herd in good condition and clean. Percentage 4.25.

Chas. Dyer, London township. Herd in good condition and clean. Percentage 4.25.

Geo. Gray, East London. Percentage 4.25.

Robert G. Blizard, London township. Herd in good condition and clean. Sells to Reuben Higg.

Reuben Higg. London township. Herd in good condition and clean. Supplies R. B. McPherson.

R. B. McPherson, percentage 4.25.

Miss Redding, city. Herd in good condition and clean. Percentage 4.20.

Thos. Hill, Westminster. Herd in good condition but not very clean. Percentage 4.20.

Alfred Gibling, Richmond street. Percentage 4.20.

James Johnston, Clarence street. Percentage 4.10.

F. L. Ross, Hamilton road. Average percentage of two samples 4.10.

James Learn. Westminster. Herd in good condition and clean. Percentage 4.10.

F. T. C. Richardson, Richmond street. Percentage 4.10.

A. MacArthur, Westminster. Herd in good condition and clean. Supplies John W. Jarvis.

John W. Jarvis, percentage 4.00.

Wm. A. Sage, Nilestown. Herd in good condition and clean. Percentage 4.00.

Jos. McLeod, London township. Herd in good condition and clean. Percentage 4.00.

R. H. Cullis, Wellington street. Percentage 4.00.

John Rogers, East London. Herd in good condition and clean. Percentage 4.00.

Mrs. McEwen, city. Percentage 4.00.

Albert Higg, London township. Herd in good condition and clean. Supplies R. McCullagh, whose percentage was 4.00.

James McLaren, London township. Herd in good condition and clean. Supplies T. Branton.

T. Branton, percentage 4.00.

Hugh Mossop, Dorchester township. Herd in good condition and clean. Supplies Henry Mossip.

Henry Mossip, percentage 4.00.

Wm. Stephenson, Nilestown. Herd in good condition and clean. Supplies J. F. McMichael.

J. F. McMichael, percentage 4.00.

Chas. O'Hagan, London township. Herd in good condition and clean. Percentage 4.00.

Miss Gyde, Horton street. Percentage 4.00.

Thos. Legg, London township. Herd in good condition and clean. Percentage 4.00.

J. W. McMichael, East London. Percentage 4.00.

Jas. Byers, Dorchester town line. Herd in good condition and clean. Supplies W. Phœnix.

Wm. Phœnix, percentage 4.00.

Mrs. Shelton, Richmond street, percentage 4.00.

Wm. Foster, London township. Herd in good condition and clean. Percentage 4.00.

Thos. Hammond, Clarence street, percentage 4.00.

David Carroll, Westminster. Herd in fair condition and clean. Percentage 4.00.

Chas. Wilson, percentage 4.00.

Mrs. Ball, Dundas street, percentage 4.00.

Joseph Gilbert, London township Herd in good condition and clean. Percentage 4.00.

G Heard, East London. Cows in good condition and clean. Percentage 4.00.

Geo. Norton, Westminster. Herd in good condition but not very clean. Supplies Chas. Cannom. Percentage 4.00.

Jas. Walker, London North. Herd in good condition and clean. Percentage 4.00.

Henry Odell, Westminster. Herd in good condition and clean. Supplies E. Poile.

E. Poile, percentage 4.00.

Daniel O'Donnell, Richmond street. Percentage 4.00.

Walter Thorburn, Westminster. Herd in good condition and clean. Average percentage of two samples, 3.95.

Henry Horne, London township. Herd in good condition, but not very clean. Percentage 3.90.

Job Cox, London township. Herd in good condition and clean. Percentage 3.90.

J. Blaney, London township. Herd in good condition and clean. Percentage 3.90.

Edward Johnson, Bathurst street. Percentage 3.90.

Heatly Fitzsimons, East London. Cows in good condition and clean. Percentage 3.90.

Wm. H. Crittle, East London. Percentage 3.90.

Chas. Combs, London township. Herd in good condition and tolerably clean. Sells to John Griffis.

Thos. Impett, London township. Herd in good condition and clean, but bad smelling and ill-ventilated stables. Sells to John Griffiths.

John Griffiths, percentage 3.90.

Jas. Warden, Dorchester township. Herd in good condition and clean. Sells to R. Heaman.

R. Heaman Cows in good condition and clean. Percentage 3.90.

Robt. Markham, Westminster. Herd in fair condition and clean. Average percentage of two samples 3.88.

Jas. Carroll, Westminster. Herd in good condition and clean. Average percentage of two samples, 3.83

Samuel Thompson, Dundas street. Percentage 3 80.

Mrs. Hackett, Proof Line. Herd in fair condition but not clean. Average percentage of two samples 3.80.

Wm. D. Yeo, Westminster. Herd in good condition and clean. Percentage 3.80.

M. Ryan, Dundas street. Percentage 3.80.

Miss Hanlon, Wellington street. Percentage 3.80.

Robt. Goddard, Ridout street. Percentage 3.75.

Chas. Dobbie, percentage 3.75.

Andrew Hogg, London township. Herd in good condition and clean. Sells to John Clark.

John Clark, London township. Herd in good condition and clean. Percentage 3.75.

Mrs Brock, Horton street. Percentage 3.75.

Chas. Sommers, London township. Herd in good condition and clean. No sample obtained.

Daniel Ferguson, Westminster. Herd in good condition and clean. Sells to W. J. Spettigue.

Wm. Walker, Westminster. Herd in good condition and clean. Sells to W. J. Spettigue, whose percentage was 3.75.

J. A. Tucker, percentage 3.70.

Thos. Frampton, percentage 3.70.

H. Brownlie, London township. Herd in fair condition and clean. Percentage 3.65.

E. Tanton. North London. Herd in good condition and clean. Percentage 3.65.

J. E. Wilkins, Westminster. Herd in good condition and clean. Percentage 3 60.

John Sinker, London township. Herd in fair condition, but not clean. Sells to Alex. McNeil.

John Webb. London township. Herd in fair condition, but not clean. Sells to Alex. McNeil, whose percentage was 3.60.

W. D. Rodenhurst, East London. Percentage 3.60.

Thos. Davidson, London township Herd in fair condition and clean. Percentage 3.60.

Chas. McMurray, Westminster. Herd in good condition and clean. Percentage 3.50.

Mrs. Rutherford, Wellington street. Percentage 3.50.

John Wilkinson, North London. Herd in good condition and tolerably clean. Percentage 3.50.

Wm. Harris, Piccadilly street. Percentage 3.50.

J. G. Hatch, London township. Herd in fair condition and clean. Percentage 3.40.

Frank Spettigue, Westminster. Herd in fair condition and clean. Percentage 3.40.

A sample from the Women's Refuge and Infant's Home gave a percentage of 3.90. Supplied by Jas. Walker.

T. V. HUTCHINSON,
Med. H. Officer.

OTTAWA.

OTTAWA, January 10th, 1895.

To the Chairman and Members of the Board of Health :

GENTLEMEN,—I beg leave to lay before you the annual report of the Health Department for the year ending October 31st 1894. The records of the past year as regards the public health will not compare favorably with previous years ; and in so far as this Department is concerned, there is no doubt cause why it should be remembered as an unfortunate year, and one associated with unpleasant memories.

The total mortality for the period comprised in this report, as shown in table 1 here appended, has been from all causes, exclusive of still births, 1,083, which, with our present population of 50,000, gives us a mortality rate of 21.66 per thousand. Out of this total number 481 deaths were of children under 5 years of age, including the death roll of foundlings in the House of Bethlehem for the same period. The mortality among children from the so-called preventable diseases during the past twelve months has been much larger than in any previous year owing to epidemics of diphtheria, diphtheric croup and scarlatina prevailing throughout the different sections of the city during the year. Though sporadic cases of these diseases were constantly developing in the community it was not until the month of October, 1893, that they assumed the proportions of alarming epidemics, which during the past year have brought sorrow and affliction into many families.

Notwithstanding all the efforts put forth by this Department to check the ravages of these maladies, they have very materially contributed to swell our death roll for the past year as it is made evident by the records of isolation hospitals for infectious diseases here appended as well as by the number of recorded victims of the same cause outside of these institutions. Whilst it is no doubt true that unsanitary conditions of the dwelling house or of its surroundings are indirect factors in the causation of such diseases, preparing the soil, as it were, by lowering the vital forces and rendering the individual more susceptible to their specific causes ; it is also true that the sanitary condition of a city should not be measured altogether by the prevailing of any such epidemic inasmuch as in nine cases out of ten they originate by personal infection.

Few indeed outside the officers of this Department know the difficulties encountered in the controlling or preventing the spread of such diseases.

Whilst among the poor, who are not always prepared to call in a physician for every apparently slight ailment, many cases, dangerous in nature but mild in form, are unrecognized and spread the disease to others through ignorance ; there are others who knowingly are criminally neglectful of such precautions as the nature of such cases demands should be taken to insure their fellow-beings that measure of protection they have a right to against such danger.

Then again the ways such diseases can be communicated from one person to another are so many that few outside the profession can be reliably trusted to consistently conduct themselves under such circumstances, therefore making isolation at domicile with few exceptions a very uncertain thing. Still owing to the fact made quite evident by these epidemics that our present isolation hospitals, in such emergencies, are inadequate to meet the requirements of our present population, many cases were left at domicile, which, in the interest of all concerned, it would have been better to remove to an hospital had there been adequate accommodation. It was, no doubt, the knowledge of this fact and with a view of being prepared for any possible invasion of the community by smallpox or cholera, that led the Board of Health of 1893, empowered as it was by special legislation to borrow moneys for such a purpose, to supply that want by causing the erection of an isolation hospital, which, if carried out as originally planned, would have endowed

Ottawa with an institution rivalled by none in the province ; but I regret to say, that for reasons which it were needless for me to detail here, this commendable attempt has culminated in a most unfortunate failure, at least for the time being.

The number of infectious diseases reported at the Health Office during the year was a follows :

Scarlatina	276	cases
Diphtheria (including croup)	263	"
Measles	6	"
Typhoid fever	6	"
Total	551	

The number of cases of measles and typhoid fever here reported evidently do not represent anything like the numbers that did occur in the city during the past twelve months. Notwithstanding the fact that for these, isolation is not so strictly enforced, it is nevertheless very desirable that physicians, when called upon to attend, and every person in whose household there occurs a case of typhoid fever, mumps, measles or whooping cough, should not forget that they are compelled by law to report the same to the health office within twenty four hours, as well as diphtheria or scarlet fever.

The milk supply of the city for household consumption is furnished by about seventy milk vendors residing on dairy farms in the surrounding country ; with the exception of three or four smaller dealers in that article who are still within the city limits. Owing to pressure of official duties in other directions no milk tests were made in this Department during the past year.

Judging from past experiences, however, and by the reports of analysis made in the Inland Revenue Department, it is safe to say that the milk supply of Ottawa is equal, if not superior, to that of any city in Canada.

The ice supply of the city for household use is taken altogether from the Ottawa river above the Chaudiere Falls. It leaves little to be desired in so far as wholesomeness is concerned ; and I am glad to note that during the past, there has been no infringement of the Board of Health regulations in this matter.

Among the various subjects in which health authorities are interested, none are farther reaching in their consequences than the school hygiene. It is, no doubt, very desirable that the young in the community should have all the advantages of a mental training in school, so as to be fitted thereby to better discharge their duties in whatever calling they may be placed, or that they may adopt in after life ; but it is equally desirable that this mental training or education should not be acquired at the expense of stunted physical development or impaired physical senses of the body. Conscious of their responsibility in this respect, both the public and separate school boards have striven to meet the demands of our increasing population ; and it is satisfactory to note that much has been done in the past two or three years to improve the hygienic condition of our schools within as well as their surroundings. The school, besides having a wholesome supply of water and proper closet accommodation (not privy pits) every class-room should be properly heated, lighted and ventilated and should be sufficiently roomy to afford each pupil therein at least 250 cubic feet of air space. Our schools, it can safely be affirmed, will compare favorably with those of any city in the province.

Though the law making vaccination compulsory has not been enforced in this city the existence of smallpox during the past year at various points across the neighboring republic and even on the the borders of the western end of the province awakened the people to a sense of danger, and caused them to protect themselves and their household against that loathsome malady by vaccination. Many, I have no doubt, have thus acted wisely in time ; but many more, I fear, are still neglectful of this duty they owe themselves, to those near and dear to them and to their fellow-beings as well, who have a right to such a measure of protection.

The systematic removal and proper disposal of kitchen refuse and garbage of an offensive nature, I regret to report, are as yet unsolved problems as far as Ottawa is concerned. This question, which undoubtedly is a very important one from a sanitary point of view, as well as a great source of annoyance to the householder especially in the summer season, will never reach a proper solution until we have a crematory furnace, when a proper system of scavenging could be inaugurated, and all such matter as well as the dead bodies of small animals, destroyed by fire.

For details of the work more immediately under the control of sanitary inspector, Mr McNeill, I beg to refer you to that gentleman's comprehensive report here attached. In conclusion I desire to express my satisfaction at the assistance given me by Mr. McNeill and his assistants in carrying out the work of this Department. I also wish to acknowledge with pleasure the aid given this Department by the police in the work of general sanitation.

Respectfully submitted,

January 10th, 1895.

(Signed) A. ROBILLARD.

TABLE I.

MORTUARY STATISTICS.

Total mortality from all causes for the year 1894.

Causes of death.	November.	December.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	Total.
Consumption	5	10	8	4	9	4	7	6	8	13	6	5	85
Pneumonia	3	10	12	5	9	5	6	6	3	2	3	3	67
Bronchitis	4	1	4	2	4	5	5	3	2	1	....	1	32
Diphtheria	4	3	2	16	12	8	1	7	3	1	9	13	79
Scarlatina	5	2	2	2	1	3	2	1	2	....	2	1	23
Croup	12	8	1	4	1	3	2	1	2	1	2	4	41
Typhoid Fever	3	....	....	2	1	....	1	3	2	1	2	2	17
Measles	....	....	....	....	....	....	2	1	2	....	....	....	5
Whooping Cough	1	2	1	....	....	....	....	....	1	3	1	1	10
Meningitis	2	1	3	3	4	2	3	2	1	4	1	1	27
Apoplexy	1	1	....	....	2	2	....	...	....	...	....	1	7
Cerebritis	....	....	....	...	....	1	...	....	....	3	2	2	8
Heart disease	3	....	2	5	1	4	1	2	1	1	....	3	23
Paralysis	3	4	2	2	2	1	2	3	3	....	2	1	25
Nephritis	1	2	1	2	....	....	....	1	....	....	1	....	8
Hepatitis	2	2	...	....	2	2	1	....	1	2	3	....	15
Gastro Enteritis	2	4	1	1	....	3	3	2	4	2	3	1	26
Peritonitis	2	1	1	1	1	1	1	....	....	1	....	1	10
Dropsy	1	4	2	1	2	1	1	1	....	4	2	2	21
Diabetes	....	2	1	1	....	....	1	....	....	....	....	..	5
Rheumatism	....	....	1	....	....	....	....	....	....	....	....	1	2
Erysipelas	....	....	....	....	....	....	....	1	1	....	....	1	3
Heart failure	1	2	1	1	3	3	1	....	..	3	....	2	17
Septicæmia	....	1	1	....	1	1	2	2	1	....	....	....	9
Congestion of Brain	....	2	....	1	....	....	....	....	2	2	....	...	7
LaGrippe	3	2	1	....	1	....	....	....	....	..	....	....	7
Pleurisy	....	.	....	....	1	....	....	....	....	....	.	....	1
Abscess	2	2	....	....	1	....	....	1	....	....	....	....	6
Old age	4	7	5	..	6	3	3	2	....	5	2	7	44
Senile Gangrene	1	1	....	....	....	....	....	....	....	....	....	....	2
Cancer	2	5	3	5	....	3	....	3	....	1	2	3	27
Tumors	....	2	2	1	....	1	....	....	....	....	1	....	7
Hæmorrhage	....	1	....	1	2	....	....	....	....	....	....	..	4
Syncope	....	1	1	....	....	....	....	....	....	....	....	1	3
Uræmia	....	....	....	....	1	...	....	....	....	....	....	....	1
Asphyxia	1	1	1	...	....	....	...	....	....	....	....	1	4
Epileptic fits	1	....	...	....	....	....	1	1	..	1	....	....	4
Eclampsia	....	.	....	....	....	....	1	....	....	....	....	....	1
Tetanus	....	1	....	....	....	....	....	....	....	....	1	....	2
Appendicitis	....	..	....	....	1	....	....	....	....	....	1	....	2
Chorœa	....	....	....	..	....	....	...	1	....	....	....	...	1
Cystitis	....	....	..	....	....	...	....	....	....	....	1	....	1
Diarrhœas	6	13	4	3	9	4	11	27	50	43	17	9	196
Exclusive of deaths in foundling institutions which were	12	6	7	6	6	8	7	12	5	11	4	3	87
Accidental deaths. By cars	....	....	....	....	....	2	1	....	1	....	1	....	5
Fall	....	....	....	....	....	....	....	....	....	1	....	...	1
Scalded	1	....	1	....	....	....	....	....	....	....	....	....	2
Gun shot wound	....	....	....	....	....	....	....	....	....	....	....	1	1
Chloroform	....	....	....	....	....	....	....	....	....	1	....	...	1
Asphyxia	...	....	1	....	....	....	....	....	....	....	....	1	2
Hydrocephalus	....	....	....	....	2	....	....	....	1	....	....	....	3
Drowned	....	....	....	....	....	....	....	6	3	1	....	....	10
Cholera nostras	..	....	....	....	....	....	....	....	2	....	....	..	2
General Debility	3	3	4	2	11	9	4	5	5	7	5	3	61
Congenital malformation	....	1	....	2	1	....	....	1	1	....	....	....	6
Premature birth	....	1	2	....	2	2	....	1	1	....	....	1	10
Child birth	....	....	....	....	....	....	1	...	....	....	2	....	3
Alcoholism	....	....	....	....	2	....	....	....	....	....	....	1	3
Suicide	..	....	....	....	....	..	....	....	...	...	...	1	1
Still births	1	2	1	...	2	1	1	4	1	....	....	....	13
Totals exclusive of still births	91	111	76	73	101	81	71	102	108	115	76	78	1,083

TABLE II.

Showing the death rate per thousand per annum from zymotic diseases as compared with total death rate in the city of Ottawa during the past eight years.

Period.	Estimated population.	Zymotic diseases.									Zymotic.		All causes.	
		Smallpox.	Measles.	Croup.	Scarlatina.	Diphtheria.	Typhoid fever.	Puerperal fever.	Diarrheal diseases.	Others.	No. of deaths.	Rate per thousand.	No. of deaths.	Rate per thousand.
1886	35,000	23	38	....	1	44	14	1	240	8	369	10.23	933	26.35
1887	38,000	....	....	....	....	36	15	....	150	6	207	5.23	778	20.47
1888	40,000	....	2	2	2	62	46	...	166	9	283	7.07	915	22.97
1889	43,000	....	13	19	5	59	18	2	188	17	321	7.46	983	22.86
1890	44,000	....	4	13	4	39	19	1	160	25	265	6.02	960	21.81
1891	45,000	....	6	14	24	30	9	3	203	21	310	6.88	908	20.17
1892	46,500	...	16	7	4	15	13	....	......	13	68	1.46	983	21.13
1893	48,000	....	5	6	5	17	16	3	158	29	239	4.97	892	18.58
1894	50,000	....	5	41	23	78	17	1	195	33	393	7.86	1,083	21.66

TABLE III.

Showing the number of patients treated in the Hospitals for contagious diseases and deaths resulting therefrom.

Diseases.	Protestant annex.			Roman Catholic annex.		
	Number admitted.	Discharged cured.	Deaths.	Number admitted.	Discharged cured.	Deaths.
Diphtheria	67	60	7	168	117	51
Scarlatina	65	62	3	39	36	3
Measles	5	5	....	2	2	....
Totals	137	127	10	209	155	54

N.B.—The large mortality here recorded in the R. C. annex as regards diphtheria can be accounted for by the fact that not a few of the cases were already in a moribund condition when brought there and died within a few hours after their admission.

TABLE IV.

Records of the House of Bethlehem for the past year.

	Children.
There were admitted in that institution during the year	200
Placed outside or returned to parents during the year	40
Died during the year	160
Total	200

Ottawa, 24th December, 1894.

To the Chairman and Members of the Board of Health:

Gentlemen,—I have the honor to submit for your consideration the annual report of the Sanitary Department for the year ending 31st October, 1894.

In presenting this, my seventh annual report, it is a pleasure to me to be able to report favorably of the manner in which the assistant inspectors have performed their duties during the past year.

The number of summonses issued were seven (7) of which six (6) convictions are on record; the seventh against Mr. W. H. Davis, contractor, 404 Theodore street, failed to be served owing to his absence from the city. The nuisance complained of still exists.

In so far as the work of the Department can be put in form, the following tables show the work done, which compares favorably with preceding years.

I am, Gentlemen,
Your obedient servant,
GEO. McNEILL,
Sanitary Inspector.

TABLE V.

Classification of nuisances coming under the notice of the Department during the year.

Description of nuisance.	By whom reported.					
	Sanitary staff.	Tenants.	Neighbors	Owners.	Others.	Totals.
Accumulation of manure	10	......	6	4	3	23
" stagnant water on lots, etc.	19	2	28	.....	2	51
Cellars flooded and otherwise polluted	73	80	5	......	......	158
Drains choked and otherwise defective	35	89	6	5	......	135
" box	12	9	......	......	1	22
" done	36	19	5	3	2	65
Dwellings unfit for habitation	11	3	......	......	......	14
" dirty, etc	3	......	1	1	......	5
" sewer-gas escaping into	19	68	11	......	......	98
Foul yards and premises	600	..	385	19	61	1,065
Illuminating gas escaping on street and into dwellings	21	20	3	......	12	56
Privies of defective construction	56	11	24	......	....	91
" want of	3	2	......	......	......	5
Pigs kept too near dwellings	......	.....	4	......	......	4
Sink untrapped	3	10	.....	.....	.....	13
" want of	1	2	......	....	.....	3
Soil pipes unventilated	9	4	......	......	.....	13
" untrapped	5	....	......	......	......	5
" otherwise defective	5	9	....	......	......	14
Waste pipes defective	8	....	.. ..	......	.....	8
Water-closets of defective construction	11	7	......	......	......	18
" unventilated	6	.....	......	......	......	6
Miscellaneous	6	5	.....	4	4	19
Totals	952	340	478	36	85	1,891

TABLE VI.

Statutory notices issued during the year.

Time.	Notices.				Totals.
	To proprietors.	To tenants and others.	Written.	Verbal.	
November, 1893	55	68	80	43	123
December "	31	15	12	34	46
January 1894	30	21	7	44	51
February "	25	21	11	35	46
March "	57	30	41	46	87
April "	38	133	31	140	171
May "	64	124	42	146	188
June "	54	181	41	194	235
July "	41	117	37	121	158
August "	53	93	44	102	146
September "	46	76	35	87	122
October "	112	61	104	69	173
Totals	606	940	485	1,061	1,546

TABLE VII.

Location of nuisances and number on each street.

Street.	Number of nuisances.	Street.	Number of nuisances.	Street.	Number of nuisances.
Albert	23	Frank	2	Ottawa	8
Anglesea Sq	3	Florence	9	Osgoode	4
Archibald	7	Flora	2	Oregon	5
Anderson	4	Gloucester	30	O'Connor	7
Ann	13	George	9	Papineau	5
Augusta	7	Grove	3	Parliament	2
Alice	4	Gilmour	7	Portland Ave	3
Arthur	11	Head	4	Peter	4
Bay	9	Henderson	2	Primrose	2
Baird	7	Hill	3	Percy	12
Bell	11	Isabella	13	Pinard	2
Besserer	19	John	5	Pine (N. E.)	5
Bridge	18	James	10	Preston	13
Bolton	10	Kent	21	Poplar	8
Boteler	7	Keefer	1	Perkins	16
Bank	39	King	14	Queen	8
Broad	5	Lisgar	17	" West	7
Britannia	2	LeBreton	7	Rochester	9
Balsam	7	Lewis	5	Rideau	40
Cambridge	13	Lett	2	Russell Ave	2
Cathcart	8	Lochiel	2	Rose	5
Cartier	6	Lloyd	9	Redpath	7
Crawford	1	Lyon	14	St. Andrew	21
Cedar	7	Lorne Ave	12	St. Joseph	15
Church	14	McGee	7	St. Patrick	27
Concession	20	McLaren	9	Sparks	31
Cobourg	9	Metcalfe	14	Stewart	14
Canal	2	McDonald	4	Sophia	7
Cumberland	24	McDougal	3	Sussex	38
Clarence	10	McLeod	11	Somerset	8
Cooper	16	McKay	14	Slater	16
Creighton	8	McTaggart	7	Sherwood	9
Charlotte	8	Maria	25	Spruce	7
Chapel	13	Murray	25	Stanley Ave	15
Currier	1	Maple	10	Theodore	18
College Ave	3	Marlborough	3	Turner	7
Charles	3	Middle	5	Vittoria	44
Cliff	3	Mutchmor	3	Victoria Ave	5
Daly	16	Mosgrove	5	Water	26
Dalhousie	16	Martineau	7	Waller	8
Division	20	Munro	3	Waverley	5
Dufferin	3	Market (W. W.)	4	Wellington	37
Duke	14	" By	7	Wilbrod	21
Elgin	8	" Cathcart	3	Willow	4
Eccles	7	Nelson	23	York	9
Emily	9	Nepean	16	Other places	42
Elm	7	Nicholas	11	Pine	5
Ellen	11	Neville	8		
Friel	8	Notre Dame	7	Total	1,546

TABLE VIII.

Privy vaults emptied and the revenue derived therefrom during the year.

Time.	Upper town.			Lower town.			Total.		
	Number of privies.	Amount.		Number of privies.	Amount.		Number of privies.	Amount.	
1893.		$	cts.		$	cts.		$	cts.
November	247	346	80	182	203	55	429	550	35
December	243	343	50	245	322	30	488	665	80
1894.									
January	251	344	47	278	360	25	529	704	72
February	156	220	10	345	485	35	501	705	45
March	199	322	35	212	300	15	411	622	50
April	223	328	15	226	312	55	449	640	70
May	158	225	95	110	153	40	268	379	35
June	24	31	95	45	44	35	69	76	30
July	32	69	60	37	73	10	69	142	70
August	14	19	20	62	69	26	76	88	46
September	61	83	90	49	35	28	110	119	18
October	18	26	70	138	164	65	156	191	35
Total	1,626	2,362	67	1,929	2,524	19	3,555	4,886	86

All of which is respectfully submitted,

(Signed) GEO. McNEILL,
Sanitary Inspector.

ST. CATHARINES.

To the Mayor and Aldermen of the City of St. Catharines:

Gentlemen,—I herewith most respectfully submit the annual report of your local board of health for 1894, in accordance with the requirements of The Ontario Health Act, for transmission to the Provincial Board.

We have, for the first time, been furnished with a blank form for the purpose of making this report upon. This form has required a large amount of statistical information not heretofore given, but, with the assistance of the Sanitary Inspector, I have succeeded in giving all that has been required.

The general health of the city has been fairly good during the past year ending 15th November, 1894, no epidemics, excepting a few cases of scarlatina, which has been considered of a very light form.

The total deaths, as per your city clerk's returns, appear as follows: old age, 7; accidental, 8; premature births, 11; various diseases, 122; making an actual death from the various diseases only 12.2 per 1,000.

Smallpox having been reported to exist in many places throughout the country you wisely ordered free vaccination, which, as per report, was generally responded to, amounting to 1,132 vaccinations successfully performed by Dr. McCoy. This duty, I trust, you will not be called upon to perform again for some time.

The Sanitary Inspector informs me that he is carefully attending to his various duties, and expects to attend particularly to removing of night soil during the cold season.

The expenses of your board, with the exception of $30, paid to caretaker of hospital, and Inspector's salary, has been about $22.

Respectfully submitted,

S. G. DOLSON,
Chairman.

Dec. 28th, 1894.

TORONTO.

To the Chairman and Members of the Local Board of Health :

Gentlemen,—In compliance with the provisions of the statute, I beg to report to the board the sanitary work done during the year 1894, and also the sanitary condition of the city as shown by the minute book in which are recorded the proceedings of the local board of health of this city ; but before doing so I submit the following statement showing the number of meetings held by the board during the year and the number attended by each member, viz.:

There were 14 meetings held during the year.

Ald.	Bailey (Chairman)	attended	11
His Worship the Mayor		"	5
Ald.	Allen	"	13
"	Burns	"	3
"	Crane	"	12
"	Crawford	"	12
"	Foster	"	13
"	Jolliffe	"	13
"	Murray	"	11

Public Vaccination.

Early in the month of January a circular was received from the Secretary of the Provincial Board of Health, on the subject of public vaccination, and asking what means have been adopted to have the same rigidly enforced.

The circular was referred to the medical health officer, with instructions to reply to the same, and subsequently public vaccination stations were opened in different sections of the city, and a large number of persons took advantage of the offer of free vaccination.

New Disinfecting Station.

This was a question the board had to deal with in consequence of the city council having decided to destroy the building formerly used as a "smallpox hospital," the disinfecting apparatus being located in the basement of this building.

A site was selected in rear of the new isolation hospital, and funds having been provided by the city council to defray the cost of erecting a new building, the work was proceeded with without delay, and the department have now a building for disinfecting purposes which answers all requirements.

Island Garbage.

The usual steps were taken early in the spring of the year to collect the garbage and refuse from the cottages on the island, and a special inspector was appointed to see that the system adopted by the medical health officer was properly carried out. The result was that not a complaint was heard during the warm weather, which speaks well for the department.

City Water.

The medical health officer has taken special interest in having the quality of the city water improved, and with this end in view the services of an analyst were secured from time to time, and samples of water were analyzed, and the result of such analysis was furnished to the city engineer, in order that he might know exactly the condition of the water

It was with pleasure the board learned that the water has been exceptionally good throughout the year, and with improvements in the system of supply contemplated by the city engineer the quality will be still greatly improved.

Dredging on Water Front.

This question was taken up by the committee on works this year, and ample provision was made in the estimates to defray the cost of dredging the principal wharves and mouths of sewers, and the work, together with some alterations in the sewage system where it empties into the bay, has rendered the condition of the water at the wharves where all the large steamers land their passengers free from obnoxious smells such as have been found at these places in past years.

Sanitary Work.

The annual inspection of the yards and lanes of the city took place early in the spring of the year, and with the system adopted by the department the work was completed earlier than usual. The result of this inspection is very gratifying to the board, as not one complaint has been sent in during the whole year.

The Sanitary Condition of the City.

The medical health officer, in his monthly report to the board from time to time on the sanitary condition of the city, stated that the same was good, and that in order to arrive at this conclusion he pointed out the unusually small number of contagious diseases cases reported at the department monthly. No doubt that officer, in his report to the board, and which report is appended hereto, will fully set out the reasons for this improvement in the sanitary condition of the city.

The report of the medical health officer for the City of Toronto is included herein.

All of which is respectfully submitted.

JOHH BLEVINS,
Secretary.

TORONTO, November 26th, 1894.

To the Chairman and Members of the Local Board of Health :

GENTLEMEN,—I have the honor to present the final report for the departmental year 1893 and 1894, which may be regarded as a summary of the work done for the year. I may say that practically the same methods of rigid quarantine and disinfection as those laid down in my former annual report for the year 1893 have been rigidly adhered to and an honest attempt made to carry them out in all their details, with a result which, I think, will be satisfactory to the members of the board and the citizens generally.

In my former report I dealt collectively with the matter of handling of contagious disease of the city. In this report I propose to deal with the preventive etiology of these diseases.

Diphtheria. In 1893 there were treated in the isolation hospital here 326 cases of diphtheria, of which 219 were tonsillar, 22 pharyngeal, 8 nasal, 51 naso-pharyngeal, and 26 laryngeal. Eleven cases were complicated with paralysis, 35 with adenitis, 6 with nephritis, 1 with erysipelas, 5 with scarlet rash, 13 with pneumonia, 3 with otorrhoea, 1 with epilepsy, and 4 with severe epistaxis. There were 63 deaths, but as 4 moribund cases are included in the number, 59 really died when under treatment at the hospital. The death rate, therefore, as we exclude or include the moribund cases, is 18.32 or 19.32 per cent.

In 1894 there were treated in the isolation hospital of this city 185 cases, of these 102 were tonsillar, 18 pharyngeal, 8 nasal, 23 naso-pharyngeal, 34 laryngeal. There were 26 deaths during the year, 9 of these were moribund when admitted, so that the actual number of deaths for which the hospital can fairly be held responsible is only 17. The diphtheria death rate, therefore, for the year is 9.60, or a fraction over 9½ per cent. With the moribund cases added the death rate will be increased to a fraction over 14 per cent.

The cases of diphtheria in the several years in Toronto are as follows :

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1892..................	141	182	150	163	141	122	75	41	75	195	194	146
1893...	115	79	100	56	84	57	20	30	21	40	39	42
1894..................	40	28	41	23	25	15	12	11	13	32	37	..

Typhoid Fever. In discussing the propagation of typhoid fever too much careful attention cannot be bestowed upon the source, character and conditions of the drinking water. In my previous report I have alluded to the appearance of typhoid epidemics as being coincident with the sewage contamination of the drinking water. After a series of careful observations, extended over an additional year, I am still of the opinion that a careful scrutiny of the conditions which may permit of an accidental sewage contamination is one of the most important duties of the health officer in studying the preventative etiology of typhoid. I am further inclined to the opinion that there are conditions which would render a modicum of sewage admitted into a drinking water at one season comparatively harmless, whilst at another season most disastrous in its results. We recognize the fact that the typhoid germ is a vegetable organism, and therefore subject in a degree to the conditions which regulate vegetable growth, so that at certain seasons of the year it will develop rapidly. Like all other plants it is predisposed to seasonable influences, and the same rule governs its period of active growth and propagation as that which regulates all organisms belonging to the same kingdom. How much temperature may have to do in arresting or facilitating the propagation of the typhoid germ is a matter which requires further study to determine. It appears, however, that the influence is important. I supply herewith the average number of colonies of bacteria per month, and also the number of typhoid cases reported per month, also the average temperature of the tap water per month. The latter is given in °C.

Date.	Colonies of bacteria.	Temperature.	Number of typhoid cases.
November, 1893	420		25
December, 1893	2,050		15
January, 1894	5,235		11
February, 1894	7,196		12
March, 1894	5,172		7
April, 1894	2,353		51
May, 1894	1,172	7.6°C.	11
June, 1894	270	7.3°C.	6
July, 1894	236	8.6°C.	6
August, 1894	206	13.7°C.	34
September, 1894	310	12.8°C.	38
October	342	8.8°C.	29

It is only fair to add that at such times as the water showed a high bacteriological rate the precautionary measure of boiling the water was advised.

Medical Health Department.

Total cost for Department, 1892	$23,060 20
" " 1893	17,700 91
Amount spent to December 1st, 1894	$12,768 38
Estimated requirement for December	1,160 76
Total	$13,929 14
Amount paid into the treasurer	551 70
Total cost for 1894	$13,377 44

Isolation Hospital.

Total cost for 1892	$17,431 25
" 1893	7,546 49
Amount spent to December 1st, 1894	$7,805 22
Estimated requirement for December	709 56
Total	$8,514 78
Amount paid into the treasurer by pay patients	989 28
Total	$7,525 50

Charles Sheard, Esq., M.D., M.R.C S., Eng., Medical Health Officer, Toronto:

Sir,—I have the honor to submit the following report relating to the patients admitted to the Isolation Hospital for the year ending November 22nd, 1894.

1. The total number of patients of all descriptions admitted to the hospital during the year was 341. Two were admitted in November, 1893; 37 in December, 32 in January, 1894, 19 in February, 36 in March, 33 in April, 44 in May, 36 in June, 20 in July, 22 in August, 15 in September, 24 in October, and 21 to the end of the hospital year, November 22nd.

One hundred and eighty-five of these were cases of diphtheria 129 were cases of scarlet fever, 18 were cases of measles, 2 of chicken pox, 2 of whooping cough, 1 of erysipelas, 1 of erythema nodosum, 2 of typhoid fever, and 1 of syphilitic pharyngitis.

There were 48 deaths during the year, but as nine of these were moribund when they were brought into the hospital, the real number of deaths for which the hospital is chargeable is only 39. The general death rate, therefore, for the year is 11.74, or a fraction under 11¾ per cent.

2. *Diphtheria.*

Of the 185 cases of diphtheria admitted, 2 were admitted in November, 1893, 34 in December, 24 in January, 1894, 11 in February, 12 in March 19 in April, 13 in May, 10 in June, 8 in July, 16 in August, 7 in September, 18 in October, and 11 to the 22nd of November.

Of the number, 102 were tonsillar, 18 pharyngeal, 8 nasal, 23 nasopharyngeal, and 34 laryngeal. Seventeen were complicated with cellutitis, 4 with cardiac debility, 3 with pneumonia, 3 with chicken pox, 2 with albuminuria, 2 with extensive paralysis, 2 with severe epistaxis, 1 with erysipelas, 1 with rheumatism, 1 with malaria and 1 with convulsions.

There were 26 deaths from diphtheria, but as the 9 moribund cases already mentioned belonged to this class the number of deaths from diphtheria for which the hospital can justly be held responsible is only 17, and the death rate accordingly for the year, as far as this disease is concerned, is 9.60, or a fraction over 9½ per cent.

3. *Scarlet Fever.*

Of the 129 cases of scarlet fever, 53 were cases of scarlatina simplex, 50 of scarlatina anginosa, and 26 of scarlatina maligna. Two were admitted in December, 6 in January, 5 in February, 22 in March, 13 in April, 18 in May, 24 in June, 11 in July, 6 in August, 7 in September, 5 in October, and 10 to the 22nd of November.

Twenty were complicated with albuminuria, 15 with adenitis, 9 with acute nephritis, 6 with otorrhœa, 5 with pneumonia, 5 with convulsions, 5 with cardiac debility, 3 with typhoid fever, 2 with cervical abscess, 1 with cholera infantum, 1 with suppurative synovitis, 1 with anæmia, 1 with pyemia, 1 with ostitis, 1 with rheumatism, and 1 with meningitis.

Twenty-one scarlet fever patients died. The death rate, therefore, for the year was 16.27, or a fraction over 16¼ per cent.

4. *Measles.*

In addition to diphtheria and scarlet fever there were admitted to the hospital during the year 18 cases of measles, 2 of chicken pox, 2 of whooping cough, 2 of typhoid fever, 1 of erysipelas, 1 of erythema nodosum, and 1 of syphilitic pharyngitis, all of which recovered with the exception of one of the cases of typhoid fever, which had previously been attacked with measles and whose illness was throughout attended with ulceration of the stomach and extreme cardiac debility.

Respectfully submitted,

G. TWEEDIE, M.D.

Isolation Hospital, 3rd of December, 1894.

Patients Removed by the Ambulance.

To Isolation Hospital	292
" General "	95
" St. Michael's "	28
" Grace "	19
" Victoria "	5
" private house	3
Patients who did not go when ambulance called	6
Total number of patients removed	442
Amount collected	$103

Note.—The printed report further contains an extended and most interesting report of the laboratory of the Health Office on the bacteriology of the city public water supply and sources of public ice supplies, by E. B. Shuttleworth, Esq.

Scarlet Fever.

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1892..................	49	99	74	63	55	47	29	21	38	53	75	68
1893..................	100	70	50	52	77	48	56	29	20	33	35	24
1894.	28	33	47	34	55	28	25	24	25	29	20	.....

Ice Regulations.

1. No person shall cut, harvest, or in any way obtain any ice within or without the limits of the City of Toronto, which is intended either for domestic use or for cooling purposes within the said limits, or shall sell, store or distribute within the said limits, any such ice, without having first obtained a permit therefor from the medical health officer of the said city, for which a fee of one dollar shall be paid.

2. No ice shall be sold, delivered or stored within the City of Toronto for domestic use or for cooling purposes (excepting as hereinafter specially provided), which shall be produced by the freezing of water which, on analysis, shall be shown to be other than that of absolute chemical purity, and upon bacteriological examination shall show more than eighty colonies of bacteria per cubic centimetre.

3. All ice cut, harvested or intended for cooling purposes only, shall be housed forthwith after being cut, and when the ice house to which said ice is consigned shall be filled, or shall, in the opinion of the medical health officer, have received its consignment for the season, the said house shall be closed and sealed by the medical health officer or the sanitary inspector, and it shall not be opened, nor any ice removed therefrom, save and except with the consent in writing of the said medical health officer.

4. No permit shall be granted in pursuance of these regulations to cut, harvest, sell, store, deliver or obtain ice for domestic use or for cooling purposes (except in cases provided for in Section 5 of these regulations), from any portion of the Toronto Bay, Ashbridge's Bay, the River Don, the Humber, or in or from any pond, bay, or body of water which has not first been approved of by the medical health officer.

5. The said medical health officer may grant permission for ice to be cut and stored for cooling purposes only from the Toronto Bay, and other water in such places and parts as he may select, the said ice to be cut and harvested under the direction of the said medical health officer, and to be housed and stored in houses to be approved of by said medical health officer, the said houses immediately after receiving such ice to be closed and sealed by said medical health officer and to be opened only with his permission and under his inspection.

6. The medical health officer may grant permission for ice to be delivered for cooling purposes to tradesmen and others, excepting milk dealers, dairymen, hotel and restaurant keepers, who have safes or receptacles for the storing of the same, which have been approved by the medical health officer, or a sanitary inspector of this board, and who do not retail or sell ice ; provided that any dealer in ice supplying ice to such party or parties for such purposes, shall, before beginning to deliver the same, inform the said medical health officer of the names, addresses and occupations of all parties to whom such dealer is desirous of delivering such ice.

7. All ice to be delivered for cooling purposes shall be carried for delivery in wagons to be approved of by said medical health officer, and which shall be used for no other purpose.

8. All dealers supplying ice to such persons shall, on delivering the same, place and store said ice in the receptacles or safes approved as aforesaid by the said medical health officer or sanitary inspector, and shall immediately thereafter secure and seal the same, and the said receptacles or safes shall not, without the consent in writing of the said medical health officer, be opened except by the dealer or dealers supplying the said ice when making their next delivery.

9. All dealers in such ice, before obtaining a permit to deliver ice for cooling purposes, shall enter into good and sufficient bonds to the satisfaction of the said medical health officer that no such ice shall be delivered to any person or persons than those named and approved by the said medical health officer, and that these regulations shall be faithfully observed and performed.

10. No person shall store in the same building ice which has been cut or harvested for cooling purposes only with ice intended for domestic use.

11. Any ice obtained from a source not approved of by the said medical health officer and stored or used, or intended to be stored or used, within the limits of the said City of Toronto, shall be liable to seizure and confiscation by the medical health officer or by any sanitary inspector.

12. Any person convicted of a breach of any of the provisions of these regulations shall forfeit and pay, at the discretion of the convicting magistrate, a penalty not less than five dollars, and not exceeding the sum of twenty dollars for each offence, and in default of payment of the said penalty and costs forthwith, the said penalty and costs, or costs only, may be levied by distress and sale of goods and chattels of offender, and in case of there being no distress found out which such penalty can be levied, the convicting magistrate may commit the offender to the common jail of the City of Toronto, with or without hard labor, for any period not exceeding one calendar month, unless the said penalty and costs be sooner paid.

Before any ice is drawn from the locality mentioned in the permit, a ticket is to be given to the driver by the medical health inspector for the delivery of the same, and the counter check is to be returned by the driver after such delivery.

SANITARY BRANCH.

Plumbing and Drainage Examined by Plumbing Inspector.

Total number of houses smoke-tested	485
" " inspected	553
" drains found defective	283
" plumbing and drainage defective	143
" " (only)	58
" " and drainage found tight	36
Total number of smoke tests by request, 69, at $5 each	$345 00
" " " 1, at $6.50	6 50
	$351 50

During the year all public and separate schools, including temporary schools, were examined by the plumbing inspector. He also had charge of the Island scavenging, the construction of the plumbing and drainage, and the laying of the concrete foundation of floor at the disinfecting station, and made repairs to the plumbing, etc., at the isolation hospital.

Nuisances dealt with in the Police Court for the Year ending 31st October, 1894.

For full and foul privy pits		90
" establishing new privy pits		7
" defective plumbing and drainage		51
" no drainage or sink for slops		11
" filthy yards and premises		17
" foul and wet cellars		11
" foul wells and cisterns		5
" water under houses		1
" stagnant water on vacant lots		5
" not furnishing wholesome water supply		2
" keeping dairy without permission from M. H. O.		3
" keeping cows within 40 feet of a dwelling		2
Number of cases prosecuted		127
" withdrawn (work done)	112	
" dismissed	8	
" fined	3	
" still in Court (Nov. 1st)	4	

A Summary in Detail of the Work done in Sanitary Branch.

Total number of	inspections of nuisances complained of	9,247
"	house to house inspections	....
"	notices issued respecting nuisances	794
"	letters " "	2,814
"	complaints received in Department	2,824
"	livery stables inspected (periodically)	40
"	rag shops inspected	29
"	fruit shops and confectioneries inspected	139
"	butcher stands and slaughter houses	202
"	bakeries	92
"	milk dairy inspections	1,267

Classification and Number of Complaints.

Privy pits, foul or full	1,474
" new, without permission	9
Dry earth closets	59
Foul, damp or wet cellars	204
Unsanitary premises, filthy yards	300
Defective and obstructed plumbing and draining	674
Garbage, slops, manure thrown in lot or lane	221
Foul stables (cow or horse)	61
Water on vacant lots	93
" under houses	
Foul wells and cisterns	23
Defective refrigerators	3
Dead animals	11
Overcrowded buildings	1
Foul sewers	61
Rag shops	9
Miscellaneous	239

Total Number of Inspections re Contagious Diseases.

Diphtheria	1,660
Scarlet fever	3,232
Typhoid fever	231
Measles	142
Funerals	49

WINDSOR.

WINDSOR, December 5th, 1894.

To the Chairman and Members of the Board of Health:

GENTLEMEN,—In compliance with section 52 of Cap. 205, R. S. O., I respectfully submit for your consideration a report of the sanitary work done during the expiring year, and of the sanitary condition of the municipality, as follows :

Work Done.

During the year the board has held 15 meetings, namely : 6 regular and 9 specials summoned by the Chairman. Five regular meetings were abortive, being attended by less than a quorum, and four specials failed from the same cause. There were two months without working meetings, viz. : July and September ; there was one meeting held in each of the months of January, May, August and October ; two in each of the months of February, April, June and November ; and three in the month of March.

In April the usual "clean up" notices were authorized and issued; the garbage of an inoffensive character placed upon the alleys and streets before the 10th of May, and all was promptly removed to the dumping grounds at an expense to the Board of about $265.00. This annual renovation of premises throughout the town was thoroughly done; and, considering the benefits resulting from it, the money disbursed is undoubtedly well invested.

The usual thorough visitation of the Inspector led to good results in respect to closets in parts of the city outside the line of sewers; and it is believed the work of emptying and cleansing vaults has been more carefully and efficiently done than ever before.

In consequence of the existence of smallpox in the large business centres, and especially in the neighboring city of Detroit, the board, hesitating to resort to enforced vaccination, in April last took steps to bring about the protection of the school population from that much-dreaded disease, and appointed Drs. Carney, Brooke, Ashbaugh and Reaume to vaccinate free of charge all children who should present themselves for the purpose. The outcome of this action, so far as has been ascertained, was the successful vaccination of about 1,800 children out of the 2,000 odd pupils attending school (including the 150 in the High School.) The cost of this section of the board's work was $276.10.

On the 23rd July a case of varioloid was discovered here: on August 6th another case of the same form of disease; and September 27th a case of smallpox in a family which later on furnished three other cases. This visitation involved placing the hospital into commission, with its attendant expense. The treatment of these cases cost as follows: assistants, $239.37; provisions, $80.57; wood, $36.50; clothing, $25.00; repairs to building, $266.83, and sundry smaller sums for disinfectants, etc. The cost of medical attendance is not yet known in full and is therefore omitted.

Sanitary Condition.

It is believed that the city was never more healthful than at the present time, and so far as reports made to this Department are evidence, there is a remarkable falling off of cases of contagious diseases, smallpox alone excepted, from previous years. To make this fact the more clear a statement for the four years of the present decade has been prepared as follows:

Names of diseases.	From Jan. 1 to Dec. 31, 1891.		From Jan. 1 to Dec. 31, 1892.		From Jan. 1 to Dec. 31, 1893.		From Jan. 1 to Dec. 5, 1894.	
	No. of cases.	No. of deaths.	No. of cases.	No. of deaths.	No. of cases.	No. of deaths.	No. of cases.	No. of deaths.
Scarlet Fever	12	....	99	3	25	1	4	....
Diphtheria	41	5	55	18	12	2	4	....
Scarlatina	1	....	1	....	1	....	2	....
Enteric fever	(*)	(*)	(*)	(*)	2	....	1	....
Varioloid	....	....	....	....	....	....	2	....
Smallpox	....	....	....	....	....	....	4	1
Typhoid fever	(*)	(*)	(*)	(*)	16	2	11	....
Total	54	5	155	21	56	5	28	1

(*) Not reported.

Typhoid and suspected typhoid were not reported prior to the latter part of 1893, when the board requested, by a written notice, each medical practitioner to report all such cases as well as those diseases universally acknowledged to be contagious and which have always been reported. To the continued prosecution of the work of sewer construction and street improvement, this very flattering change in the sanitary condition of the municipality is undoubtedly largely due. Two sewers have this year been built, one a small lateral on Victoria avenue, and the other a large main over a mile in length, beginning at Adelaide street and traversing Wellington avenue to London street, and thence along Elm avenue to the river Detroit. This latter work is a most important one inasmuch as it affords perfect drainage for that low section of the city south of Wyandotte street which hitherto had almost wholly to depend upon evaporation, and for the coulees north and south of London street, the rainfall gathered in which coulees had no effectual means of escape. The people who for many years suffered from lack of a sewer such as they now have, and the Board of Health who joined them in efforts to obtain relief, were invariably thwarted by legal impediments interposed to prevent the improvement; and it is all the more satisfactory to know that the present year's council found means of removing all obstacles and at the same time to construct the sewer, the cost of which is, in round numbers, $25,000.

The board employed Mr. Willis Chipman to draft certain by-laws to regulate drainage, plumbing and plumbers, which by-laws were considered from time to time by the board and one of them introduced in the council; but that is all that has been accomplished in that direction.

The total expenditure of the board to date foots up $2,176.12. The estimated expenditure $2,000.00.

A statement appended hereto shows the disbursements under the appropriate headings.

Most respectfully submitted,

STEPHEN LUSTED,
Secretary.

P. S.—Just before closing this report another case of typhoid fever has been reported.

WINDSOR.

Dr. Carney, Chairman Board of Health, Windsor:

DEAR SIR,—As required by By-law No. 435, I hereby submit my annual report, which must be rather a chronicle of what has not been done than a record of what has been accomplished.

The following scheduled diseases have been reported at the health office:—Typhoid fever, 11 cases; diphtheria, 4 cases; scarlet fever, 6 cases; smallpox, 6 cases, with one death.

These figures are at once satisfactory and unsatisfactory; they represent the facts as far as diphtheria, scarlet fever and smallpox are concerned, but the typhoid figures are wholly unreliable.

Not less than 100 cases of continued fever have occurred within the year, some of them being well marked typhoid, but the great bulk of them presenting only an occasional symptom of typhoid fever. Their duration, however, has been from three to four weeks.

Many medical men hesitate to report as typhoid fever, cases which have only one or two symptoms of that disease. I find no record of deaths in the city clerk's office, and until the Provincial Government furnish municipalities with books of record to make it obligatory for municipalities to provide them, mortuary returns can only be compiled from reports in the statistical department, no copies of which are retained by the clerk. Now that the Federal Government has abandoned the collection of mortuary statistics from health officers I think provinces should require monthly returns, and that books of record should be kept in every municipality.

In the month of April, when winter was breaking up, the health inspector reported several blocks and houses in a condition dangerous to the inhabitants, and several members of the board accompanied the officers in their rounds of inspection in order to verify the reports. These unsanitary premises included hotels, stores of all kinds, tenement buildings, offices and workshops. The house drainage in many of these buildings, when not blocked up, served the double purpose of carrying away slops, and, not being trapped, acted as ventilating shafts for the street sewers, but instead of carrying the gases above, the houses delivered them inside.

The plumbing in many instances was the coefficient of the drains, and the conviction was impressed on all who witnessed these death-traps, that nothing short of a by-law to regulate and control the construction and maintenance of plumbing and house drainage would remedy the evil.

To adopt plans for new work is an easy task, but to reconstruct old work was not so easy. By resolution of the board, Willis Chipman, C.E., of Toronto, was called in for consultation, and he submitted three by-laws, one for licensing plumbers, one for regulating plumbing and one for house drainage. The board asked the council to pass these by-laws but no action has been taken.

In May, smallpox broke out in Detroit, and in order to be prepared for it here the old buildings were repaired and fitted up for the reception of patients. In July, we had our first case, others following at intervals of about a month, the last of them having been discharged yesterday.

Four vaccinators were appointed for the schools and free vaccination extended to all. For several weeks an officer attended at the city hall two hours a day, but I have reason to believe that the whole community is not protected, and enough still remain to furnish a foothold for the disease.

I do not think that compulsory vaccination can be satisfactorily enforced under municipal control, but in order to cover the ground effectually the order must be enforced from provincial headquarters.

During summer we had ample accommodation for the care of smallpox patients, but as cold weather approached the council was asked for a grant of $1,000 to cover current expenses and the construction of temporary winter quarters. This request has not been complied with, and to-day if a case occurred it would have to remain where it developed, to the great detriment of business in the vicinity and danger to the inhabitants.

Requisition has been made by the board for the appointment of a public vaccinator but no action has been taken by the council.

I made an inspection of milk in August, and out of 22 samples analyzed, 19 were below standard. I reported the results to the board and the board in turn requested the council to pass a by-law licensing milk vendors. No by-law has been passed.

Five thousand eight hundred and eighty feet of sewers have been constructed this year in size varying from two feet to four feet eight inches, but the board of works still retain the right to order house connections and when nuisances are reported by the board of health for want of proper drainage, the board of works do not act. This is a perennial source of trouble and conflict of authority which cannot be justified.

Four schoolrooms have been added this year, which will accommodate 200 pupils, and there is under construction a six-roomed building which will be ready next spring. This one will hold 300 pupils. Windsor will then have, for the first time in its history, ample accommodation for the admission and seating of all school children, and the heating and ventilating of every school will be of the most modern and approved methods.

The water furnished to consumers is still "as clear as mud," and another year has been wasted in proving that the by-products of Walkerville and its sewers are as popular as ever with the water commissioners. I understand there is some intention of filtering the sewage, but nothing short of extending the inlet above the sewers will ever suffice. It will be very hard to satisfy those who drink water that a good manufactured product can be made from such very raw material.

Since 1884, when I assumed the duties of medical health officer, this has been the least satisfactory year for sanitary progress.

A great deal of work remains to be done to make Windsor the model residential city which its situation and natural advantages so eminently fit it to become. But with a divided board, some members of which did not attend more than three meetings and then only for the purpose of obstructing business, and an antagonistic council, it is high time for the people of Windsor to consider seriously the inevitable result of neglecting house drainage, plumbing, vaccination, a pure water and milk supply and providing a contagious disease hospital.

Every one of these are absolute necessities, and no better investment of public moneys can be made than by adopting them, and the money value they will represent will only be exceeded by the saving of life and improvement of health.

(Sgd.) JNO. COVENTRY,
Medical Health Officer.

WINDSOR, Nov. 15th, 1894.

CITIES.

Report to the Provincial Board of Health containing Summary of Replies

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Belleville A.—1,700. H.— P.—10,221.	Robt. Tracy, M.D	House to house inspection.	Scarlatina cases, 37 : deaths, 1 ; diphtheria cases, 2 ; typhoid cases, 3.
Brantford A.—2,541. H.—3,000. P.—15,273.	E. Griffin, M.D.; Samuel Adams, sanitary inspector.	Systematic inspection, 2 inspectors.	Scarlatina cases, 135 ; deaths, 22 ; diphtheria, 33 ; deaths, 2 ; typhoid, 42 ; deaths, 3.
Hamilton A.—3,696. H.—10,300. P.—48,238.	Dr. Ryall, H.H.O.; Garner & Macdonald, sanitary inspectors.	Special inspectors are employed in the spring. The regular inspectors attend to complaints, look after the markets and milk supply.	Smallpox, 10 ; scarlatina, 134 ; diphtheria, 318 ; typhoid, 124. Deaths, diphtheria, 67; scarlet fever, 2 ; typhoid, 6.
Kingston A.—2,300. H.— P.—17,348.	S. H. Fee, M.D., M. H. O.	....	Typhoid, 54 ; scarlet fever, 24 ; diphtheria, 26 ; smallpox, 1 ; measles, 1.
London A.— H.— P.—31,615.	T. V. Hutchinson, M.D.; Wm. Bell, sanitary inspector.	Two to four inspectors employed, together with sanitary inspectors, every spring until the city is cleaned. All premises, yards, wells, etc., inspected.	Scarlatina, 34 cases ; diphtheria, 130 cases ; typhoid, 43 cases.
Ottawa. A.—3,366. H.—9,327. P.—47,135.	H. Robillard, M.D.; Geo. McNeil, sanitary inspector.	Inspection of premises twice a year by sanitary inspector and two assistants. Also six special sanitary policemen.	Scarlatina, 275 ; deaths, 23 ; diphtheria, 264 ; deaths, 79 ; typhoid, 227 ; deaths, 17.

CITIES.

to a Circular *re* Sanitary Condition of the Municipality for the year 1894.

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
Hospital. House placarded and general isolation of patients.	No. Neither School Board nor Board of Health would order compulsory vaccination. About 1,700 vaccinated.	Sulphur fumigation, etc.	Six schools— 1, 9 rooms, 522; 1, 5 rooms, 160; 1, 3 rooms, 210; 1, 2 rooms, 84; 1, 2 rooms, 90; 1, 6 rooms, 380.	Three schools; 160 feet; 1, 181; 1, 208; 1, 136.
No isolation hospital. No method of isolation except placarding, etc.	Compulsory for children attending public schools. 2,800 vaccinated. Attendance at public schools 2,096, separate schools 280.	Bichloride of mercury supplied to affected families. Sometimes done by sanitary inspector.	Six public schools; 2 separate schools. Public schools have 40 rooms, separate schools have 5.	250 feet ....
Houses placarded, except for typhoid. Notice given not to mingle with general public. Smallpox hospital on refuge grounds. Isolation hospital on general hospital grounds.	No............ . .	In private families the physician furnishes the mode of disinfection. Where families are poor the Local Board attends such cases. The regular inspectors are not allowed to attend or expose themselves to contagious diseases for fear of carrying contagion to houses.	Twenty-one schools: 1, 16 rooms; 5, 12 rooms; 5, 8 rooms; 5, 4 rooms; 2, 3 rooms; 3, 2 rooms. Attendance to each about 50; 1 collegiate institute; high school average attendance 599.	240 feet ... ...
.. ..	....	....	....	....
Separate wards for infectious diseases in city hospital. All cases not sent to hospital are isolated in dwelling and placarded.	General vaccination not enforced. All children are excluded from schools who cannot show a medical certificate of having been vaccinated.	In dwellings patients are isolated as much as possible. Sheets hung on doors, saturated with carbolic acid, etc. Public excluded.	Eighteen schools and 98 rooms; 3 night schools for boys, and 1 for girls. Total on roll 5,264, average attendance 4,604.	Unable to furnish...
Chiefly in the hospitals.	Vaccination not compulsory, but large numbers have been vaccinated. Cannot give the number.	Fumigation with sulphurous acid fumes.	Fifteen public schools, 69 classrooms, average allowance to each 32 pupils; 20 separate schools, 80 classrooms, average attendance to each 38 pupils.	In public schools, average cubic air space to each pupil 275 feet. In separate schools, average space to each pupil 225 feet.

CITIES.

Report to the Provincial Board of Health containing Summary of Replies

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Belleville .... A.—1,700. H.— P.—10,221.	Forms for physicians as laid down in by law. No special for teachers.	....	From Bay of Quinte, some wells, soil of sandy character, half clay and lime stone rock.
Brantford .... A.—2,541. H.—3,000. P.—15,273.	Both supplied, and both freely used.	Thirty-six factories, 2,150 employees.	Water supply excellent, 1,725 services, about 1,800 wells, sandy soil, sand and gravel down to clay.
Hamilton .... A.—3,696. H.—10,300. P.—48,238.	No general forms in use. Telephone used from Health Officers for schools. In some cases the inspector calls to notify teachers.	Can't say..............	Lake Ontario, some wells are used, mostly surface water, soil mostly blue clay, somewhat lighter soil in upper districts.
Kingston.................. A.—2,300. H.— P.—17,348.	....	....	Quality of water greatly improved.
London .... A.— H.— P.—31,615.	M. H. O. immediately notifies principal of school, on printed slips.	Don't know	Water supplied from spring, but some wells still in use in suburbs ; soil, sand and gravel.
Ottawa .... A.—3,366. H.—9,327. P.—47,135.	Yes. Yes	Don't know. Possibly this information could be better obtained from the inspector of factories.	Ottawa River, above Chaudiere Falls, no well water used.

CITIES.

to a Circular *re* Sanitary Condition of the Municipality for the year 1894.

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal.	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
About 120 cows in city, looked after by inspector; 2 tests for tuberculosis, without any result.	None in city	By householder	Part dry earth closets.	Part dry earth closets, and pits which are emptied and disinfected by licensed scavenger and emptied into river.
347 inspected once or twice a year by sanitary inspector and veterinary. No tuberculosis.	Three in city, inspected, no system of drainage, offal removed from city.	No proper system of garbage disposal, left largely to householders, thoroughly done once a year for all, contract for emptying privy pits, etc., and 2,000 dry earth closets.	2,000 dry earth closets, 425 sewer connections, sewerage discharged into river two miles below; by contract at $150 per annum, monthly services.	Soap works, one has caused complaints; 3 slaughterhouses, often inspected.
133; veterinary inspection when required, no examination for tuberculosis.	Two slaughterhouses, no license, one empties into sewer, the other into inlet. Thorough inspection.	By Local Board of Health, garbage mixed with ashes has been used for filling up purposes, night soil removed to country.	Where no sewer exists cess pools are used, in some cases scattered around; earth closets have contents removed by parties using them to country.	Three, 2 fertilizing factories and 1 lithrage factory, no license.
....	Offal is removed by private parties on vehicles unsuitable for that purpose.	Scavenger system gives general satisfaction, odorless system of removing night soil.	....	....
Very few cows in city, no inspection, generally first-class animals. Inspection by M. H. O. of all dairies supplying city with milk.	No slaughterhouses allowed within city limits.	Night soil carted to a farm and ploughed into ground under sanitary inspection, garbage deposited in barrels and removed.	Sewage empties into river Thames; a few dry earth closets in use.	None of them allowed, except the storing of hides and manufacture of gas; are frequently inspected.
Licensing of milk vendors is in the hands of chief of police, who is also license inspector; can't get the number of dairy cows; inspection of dairy farms made occasionally.	No permit or license to any slaughterhouse in city.	Night soil and garbage removed by contract to farm lands, for fertilizing or manure purposes.	Sewage disposed of by sewers or drains.	Storing of hides, soap boiling, gas manufacturing, are licensed by corporation, others are not, but are under Board of Health surveillance.

CITIES.—*Concluded.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
St. Catharines .... A.— H.— P.—9,170.	Arthur Bolden, sanitary inspector.	House to house inspection during the year.	Scarlatina, 16 ; deaths, 4; diphtheria, 1 ; deaths, 1 ; typhoid, 7 ; deaths, 4 ; premature births, 11 ; accidents, 8 ; old age, 7 ; various diseases, 122. Death rate, 12 per cent. per 1,000.
Toronto .... A.—10,500. H.— P.—188,333.	Chas. Sheard, M.D.; L. M. Bowman, chief sanitary inspector.	House to house inspection during the spring months made by temporary staff of inspectors, and general inspection upon receipt of complaints made by two district sanitary inspectors.	Scarlatina, 386 cases ; diphtheria, 301 ; deaths, 84 ; typhoid, 245 ; deaths, 34.
Windsor .... A.—2,300. H.— P.—10,970.	John Coventry, M.D., M. H. O.; Donald Greevis, sanitary inspector.	House to house inspection. Every house once a year at least.	Smallpox cases, 6; scarlatina cases, 6 ; diphtheria cases, 4 ; typhoid cases, 11. There were a great many more cases of typhoid not reported.

CITIES.—*Concluded.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Isolation by card. One isolation hospital used for smallpox only.	Not compulsory. 2,200 children in the city, 1,132 vaccinations in city, 1894.	Disinfection supposed to be done by physicians as required, by most approved methods.	Eleven schools and 44 rooms; public schools with 25 rooms, as follows: 37, 40, 45, 55, 60, 40, 46, 54, 67, 60, 39, 61, 41, 60, 42, 46, 54, 47, 37, 56, 55, 53, 57, 37, 55; separate schools, 10 rooms, 42, 21, 71, 30, 35, 32, 34, 41; collegiate institute, 9 rooms; average, 24 to each room.	Public schools, average 235 cubic feet; separate school, average 220 cubic feet; collegiate institute, average 400 cubic feet to each pupil.
An isolation hospital constantly maintained. Daily quarantine of infected houses by sanitary officers. Separate disinfecting station and steam disinfector, with horse and wagon equipment, and men in charge.	Vaccination compulsory in schools. Certificate called for. Total number of vaccinations done by Health Department, year 1894, 1,900.	First infected rooms, and house washed out with 1-1000 bichloride mercury by a man from the Health Department. Clothing, bedding and goods disinfected by steam. 2,300 total houses disinfected.	See public schools. Secretary's letter hereto attached.	See public schools. Secretary's letter hereto attached.
Hospital for smallpox. All cases promptly removed to it. The others by notification. Isolation by placard, and families confined to premises.	No. School children are required to be vaccinated. Were vaccinated by public vaccinators. Cannot say how many were vaccinated.	Bichloride of mercury 1 to 500 applied freely to clothing, carpets and bedding, and while damp sulphur fumes, 3 lbs. to 1,000 cubic feet of space. Building kept closed.	Eight schools; 50 rooms; 1,835 pupils. There are from 28 to 54 in each room.	Fifty rooms, heated and ventilated.

CITIES.—*Concluded.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
St. Catharines A.— H.— P.—9,170.	Notification forms not used by teachers, only by physicians, who use them as required.	Thirty-two factories, employing 1,052 hands in busy season.	Water supplied by city waterworks, very few wells now in use; soil and sub-soil, sandy.
Toronto A.—10,500. H.— P.—188,333.	Yes		Lake Ontario.
Windsor A.—2,300. H.— P.—10,970.	Yes. Yes	There are no factories worth mentioning. Tailor shops are the dirtiest and worst ventilated.	Detroit river, polluted by washings from clay bank, but worst from Walkerville sewage.

CITIES.—*Concluded.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herbs for tuberculosis.	Slaughterhouses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
No dairies, no inspections, milk supplied by different parties, whose premises are inspected by sanitary inspector.	Two slaughterhouses not licensed, regularly inspected.	No particular methods as to disposal of garbage. night soil removed by householders.	Sewage disposed of in some places by drainage, a few dry earth closets, but mostly privy pits. No contract for removal.	One soap boiling factory, 1 hide storage house, 1 gas manufacturing place. No license or regulations by sanitary inspection.
There is continuous inspection of dairies within the municipality, and bi-annual inspections of outlying dairies supplying the municipality.	All slaughterhouses are drained and the offal is removed in barrels. Slaughterhouses are examined periodically.	Disposal of garbage by city.	Sewer system ot drainage, outlet into lake, out and via Toronto bay.	....
About 200, no medical or veterinary inspection, except on complaint of milk takers. Council makes no appropriation.	None	Removed at public expense, at least once a year inspector sees that all householders clean up, this is done in May, after that individuals are required to remove garbage themselves.	By sewers into Detroit river.	No noxious trades within city limits.

TOWNS.

Municipality.	Name of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Barrie A.— H.—2,100. P.—5,000.	L. Oliver, M.D.; R King, sanitary inspector.	Partial inspection	Scarlatina, 38; deaths, 6; diphtheria, 10; deaths, 21; typhoid not reported or placarded.
Blenheim A.— H.— P.—1,622.	Charles B. Langford, M.D.; Miles Ketchum, sanitary inspector.	Inspector visits from house to house in spring notifying all to clean up, and calls later to see if it is done. Inspects water closets, etc. Majority use dry earth closets.	Scarlatina, 20 cases; diphtheria, none; typhoid, 2 cases.
Bracebridge A.—800. H.—250. P.—1,600.	Samu'l Bridgland, M.D.; Robt. E. Armstrong, sanitary inspector.	Twice a year by sanitary inspector and local board.	Diphtheria, 19 cases; deaths, 2; typhoid, 7 cases; deaths, 1.
Bowmanville A.— H.— P.—3,170.	B. Lammiman, M. D.; Richard Jarvis, sanitary inspector.	Careful inspection in the spring and when any nuisance is reported.	Scarlatina, 2; diphtheria, 1; deaths, 1; typhoid, 3; deaths, none.
Brampton A.— H.— P.—3,340.	John Fingland, sanitary inspector.	House to house inspection.	Scarlatina, 3 cases, 1 death.

TOWNS—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
No particular method but the best that can be done under the circumstances. No isolation hospital.	No; about 800 public school and separate school; collegiate institute, 180.	Under instructions from sanitary inspector; closing rooms and fumigating with sulphur.	Three public sch'ls, 1 Roman Catholic, 1 collegiate institute; in collegiate institute 6 class rooms, attendance in each 30; central public school, 9 rooms, 430 children; each room in other schools will average about the same.	In collegiate institute 330 cubic ft.; east ward public school 402; central public school 210; west ward public school 246; separate school 250.
All houses where contagious diseases exist are placarded. Children prevented from attending school, etc. No isolation hospital.	Yes; about 400; nearly all, should say 350.	Houses fumigated with sulphur, etc.; patients not allowed to leave the house for prescribed period, etc.	One; 8 rooms, about 40 in each room.	About 300 cubic feet.
No isolation hospital. Isolated in house.	Yes; nearly all children vaccinated who had not been vaccinated before.	Disinfected by M.H.O. or other attending physician.	One school, 7 rooms, total average attendance about 400.	....
Isolation by placards. No hospital.	Yes; school children about 675, vaccinated about 200.	Disinfection by sulphurous fumes principally.	Two public schools and 1 high school; 1 public school with Smead-Dowd system, attendance 460 in 10 rooms, and 90 in 2 rooms; high school, 125 to 140 in 5 rooms.	250 feet ....
None	No; none so far as Board knows.	....	Four schools, 5 rooms in 1 and 2 in each of the others. Attendance as follows: 36, 28, 35, 49, 65, 55, 53, 40, 43, 51, 49.	Don't know ....

TOWNS—*Continued.*

Municipality.	Forms for notification by teachers and H. M. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Barrie A.— H.—2,100. P.—5,000.	No knowledge of forms being supplied to teachers or M. H. O.	One tannery, 20 hands; gas house, 2 hands; 1 foundry, 6 hands; 1 planing mill and builders' supplies, 10 hands; 2 breweries, 6 hands; 3 flour mills, 1 tailoring establishment, about 18 hands; 1 carriage shop, 4 hands, and the usual number of small establishments in a population of 5,000 to 6,000.	Public; partial supply from artesian wells. Wells outside soil and sub-soil, sandy and gravelly.
Blenheim A.— H.— P.—1,622.	Yes. Yes	Five; 1 mill, 1 stave and hoop factory, 40 hands; 1 planing mill, 10 hands; 1 planing mill, sash and doors, 5 hands; 1 bending factory, 20 hands; 1 bending factory, 15 hands; 1 cooper shop, 12 hands.	Wells; light loam, gravel bottom, which lies in blue clay.
Bracebridge A.—800. H.—250. P.—1,600.	M. H. O. supplied, also other physicians who make use of them.	Two factories, 2 tanneries, 3 saw mills; number of employees varies	Water supply from wells generally; municipality has recently put in system of waterworks.
Bowmanville A.— H.— P.—3,170.	Forms supplied	One factory, Dominion Organ and Piano Co., employs from 75 to 100 hands: two foundries, employ from 15 to 25 hands.	Wells; excellent water, clay sub-soil, clay loam, top soil.
Brampton A.— H.— P.—3,340.		Young & Co., steam fitters' supplies, etc., 25 employees.	Loam and clay

TOWNS—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses; Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Ninety-five; no, never examined.	Four; no system of drainage, offal fed to hogs.	Buried on lot outside of town by contract and householders both.	Partial sewage system flowing into bay; dry earth closets and privy pit system: contract removal.	One gas house; 4 slaughterhouses not licensed; looked after by sanitary inspector.
About 15; no inspection.	None.........	Garbage by owner: night soil by paid scavenger.	Mostly dry earth closets; contract.	None ....
Thirty-two dairy cows; stables inspected by sanitary inspector, no tuberculosis.	One which is a great nuisance and which the Board has tried to do away with, but have been prevented by adverse decisions of police magistrate.	By person employed by municipality, and which is removed outside of municipality.	No sewers in town; earth closets partially used; execreta, etc., removed outside of municipality.	None ....
Two dairies; between 20 and 30 cows each, no inspection.	Four slaughterhouses near the outskirts of the town; none licensed; drainage collected and spread on lands or buried; same with offal.	Privy pits, etc., and when required by householder garbage removed.	Natural drainage good; a few dry earth closets in private residences.	None in town.......
Fourteen; no	Four slaughterhouses, offal buried.	Buried by householder.	....	None ....

TOWNS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Chatham A.— H.— P.—8,645.	W. R. Hall, M.D. J. R. Gultridge, sanitary inspector.	All premises in town are systematically visited once a year in early spring. Yards, cellars, waterclosets, wells and drains are inspected and if not found in sanitary condition a notice exhibit is served.	Scarlatina, 19 cases; diphtheria, 94; deaths, 7; typhoid, 76; deaths, 2.
Clinton A.— H.— P.—2,370.	J. W. Shaw, M.D J. Wheatly.	Notices are served in April to every householder giving instructions how to clean house and yards, wells, etc. In a month the inspector visits each house and inspects; where notices have not been followed steps are taken to enforce.	Typhoid, eight cases, no deaths.
Cobourg A.— H.— P.—4,609.	Dr. McNicholl, M. H. O.	The slaughterhouses were inspected and found satisfactory.	15 cases of diphtheria, 5 deaths; scarlet fever, 18 cases, 1 death.
Collingwood A.—4,400. H.—1,100. P.—5,000.	A. R. Stephen, M.D. B. F. Lewis, sanitary inspector.	The whole town by the local board of health. Periodical visits by M. H. O. and inspector.	Diphtheria, 2; typhoid, 2.
Dresden A.— H.— P.—1,973.	No M. H. O. Edwin Gougon, sanitary inspector.	Personal inspection in the spring of all back yards and other premises, wells and privies, and supervision thereof during the year.	Scarlatina, 10; death, 1; diphtheria, 2; death, 1.
Dundas A.— H.—1,264. P.—3,016.	Dr. T. A. Bertram Peter Atkins, sanitary inspector.	....	Scarlatina, 6; diphtheria, 2; deaths, 2; typhoid, 1.

TOWNS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality. How many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools, number of rooms, and attendance in each.	Average cubic air space to each pupil.
No isolation hospital. When contagious diseases develop, a room in the house is selected for the patient, and one person only permitted to attend, other members of the family not to visit the room nor mingle with the public. A card put on the door denoting the disease.	Vaccination made compulsory at time of small-pox scare; yet in force; number of school children 5 to 16=1,911; from 16 to 21=672; between 800 and 900 children vaccinated.	After patient recovers the whole premises are thoroughly fumigated and disinfected.	Seven public schools, 27 rooms in all; average attendance in all schools 174; average attendance in rooms 45; maximum 55, minimum 28; 1 separate school, 5 rooms, average attendance 181; 1 collegiate institute, 6 rooms, average attendance 207; Wilberforce educational institute, average attendance 51; business college, 2 rooms, average attendance 110.	294 feet ....
None except from house to house.	No; 450; about 20 vaccinated in 1894.	Houses placarded, all patients isolated; room thoroughly disinfected; cellar, wells and yards inspected; all offal buried after being disinfected.	One public, average 400, 8 rooms; one collegiate institute 170, 4 rooms.	225 feet ....
The usual precautions were taken; have patients properly isolated.	Public vaccination was recommended and a proclamation was issued asking the people to give their prompt attention, with the gratifying result that about 900 were vaccinated.	The usual mode of disinfectants under direction of the chairman.	....	....
No hospital........	No; about 1,500; about 650.	....	Four; No. 1 has 16 rooms, all the others have 2 rooms each.	Rooms all large, good ventilation.
Placarding houses when such diseases exist, and confining occupants thereto as far as possible. No isolation hospital.	Yes; 430; 225......	By the use of ordinary disinfectants under the direction of the medical practitioner.	One; eight; average attendance in each 34.	Cannot say.........
Have none. Houses are placarded for 6 weeks.	Not compulsory ...	Houses thoroughly fumigated with sulphur.	The public and high schools are in one large building containing 13 rooms.	....

TOWNS —*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used give character of soil and sub-soil.
Chatham .... A.— H.— P.—8,645.	Enclosed forms marked 2 and 3. Both supplied and made use of.	Twenty-one establishments, employing 746 hands.	Waterworks: source of supply, artesian wells and ordinary wells about town; soil, clay loam; sub-soil, blue clay: domestic wells cleaned out once a year.
Clinton .... A.— H.— P.—2,370.	None. None..........	Eight establishments, 252 hands employed.	All well water; sand and clay in higher parts.
Cobourg.......... A.— H.— P.—4,609.	....	....	....
Collingwood.......... A.—4,400. H.—1,100. P.—5,000.	No	One; about 12 hands....	Sand and lime stone ....
Dresden.......... A.— H.— P.—1,973.	Supplied to teachers and medical practitioners, who all use them.	Stave and hoop mill, 30 hands; stave mill and lumber, 20 hands; hub and spoke factory, 15 hands; sash and door factory, 6 hands.	Wells; partly sand and sandy loam; with quicksand sub-soil; partly clay loam with clay sub-soil.
Dundas .... A.— H.—1,264. P.—3,016.	Have been notified......	Eleven factories	Waterworks, spring water. Some wells still used.

TOWNS.—*Continued.*

No. of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. (Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil, whether by contract or only by householder.	Sewage. How disposed of, whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
Number of cows in town and country; supplying milk in town, 199; number of licenses issued, 32; no regular medical or veterinary inspection of cows for tuberculosis unless suspected it exists by sanitary inspector.	No slaughterhouses allowed inside corporation; all slaughter houses where meat is killed for use in town, inspected twice a year.	All night soil and garbage conveyed out of town and buried by scavengers appointed by Board of Health; all scavengers must be provided with proper appliances approved of by sanitary inspector.	Town sewage drained into sewers; contents of dry earth closets removed by scavengers, to be taken out of town and buried.	No noxious trades in town.
Two dairies; one has 60 cows, the other has 25; no inspection made.	Four outside of town, offal fed to pigs.	Garbage and night soil carted to a farm 1½ miles from town by house holders with one firm.	A few dry earth closets, about 10; gradually increasing; contract; one firm doing most of it.	None
....	....	....	....	....
490 : no	Three ; no drainage ; fed to pigs.	Contract partially in thickly settled portion of town, mostly householders.	Dry earth ; contract.	None
None in the municipality.	None in the municipality.	By householder	Thrown on garden grounds and other vacant places.	None
21 cows. No veterinary inspection. No license required.	None in the corporation.	Removed by householder.	No dry earth closets.	Two tanneries, no license required, 1 gas company.

TOWNS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Forest A.— H.— P.—1,589.	Dr. H. J. Nash, M.H.O. Henry Harvey, sanitary inspector.	All houses examined twice a year by sanitary inspector. Three hotels and two livery stables examined by M. H. O. and S. I.	....
Galt A.—1,477. H.—1,800. P.—7,220.	Dr. Wardlaw, M. H. O. James Robson, sanitary inspector.	Notice given by local papers to clean up by 15th May. Then a house to house inspection by health inspector, afterwards periodical visits are made.	Scarlatina, 11; diphtheria, 2; typhoid, 11.
Gravenhurst A.— H.— P.—1,765.	H. P. Cornell, M. H. O. A. Sloan, sanitary inspector.	General inspection......	....
Goderich A.— H.— P.—3,462.	Alex. Taylor, M.D...... James Reid.	Inspection once a year and when complaints are made.	Typhoid, 3 cases, 1 death.
Kincardine A.—500. H.—400. P.—3,000.	N. Hopkins, M.D....... Jacob Burley, sanitary inspector.	From house to house, yards, stables, outside buildings from time to time.	Scarlatina, 3; diphtheria, 12, 1 death; typhoid 3, 1 death.
Lindsay A.— H.— P.—6,227.	....	....	....
Listowel A.— H.— P.—2,546.	L. W. Thompson, M.D. R. Balmer.	House inspection by board and sanitary inspector.	12 cases scarlatina; 6 cases diphtheria, 2 deaths; typhoid, 10 cases.
Leamington A.— H.— P.—1,934.	J. T. Sutherland, M.D. Milo Kenny, sanitary inspector.	A careful investigation of the alleys, water closets and back yards of the whole town.	Scarlatina, about 6 cases.
Meaford A.— H.— P.—1,797.	No medical health officer. Richard Dealy, sanitary inspector.	The inspector goes over the town once or twice a year. Has all filth and garbage removed.	Two or 3 cases of diphtheria, 1 death.

TOWNS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	No; 276 attending common school; 196 vaccinated. High school attendance, 96; 10 vaccinated.	No contagious diseases.	Three schools and 6 rooms with about 45 in each. High school, 4 classrooms, 96 students.	300 feet; high school 450.
Isolation at home of patient and nurse. No children allowed to attend school from infected house. No isolation hospital; 1,588 pupils; 1,438 vaccinated in 1894.	Notice is given to children not to return to school after holidays without being vaccinated.	Houses placarded. Patient isolated. Stools, etc., disinfected. Rooms afterward fumigated and cleaned.	Five. Central 9, 52 to 62; Dickison 7, 47 to 53; Victoria 7, 60 to 65; Collegiate, 6 rooms, used by 190 pupils; separate, 1 room, 85 on register, 75 in attendance.	One 147 to 200, one 195, one 137, one 318, one 176.
No hospital	No compulsory vaccination; 400 to 500 school children.	House ventilation. Sulphur burned, etc.	Three schools, 10 rooms; from 15 to 60, occasionally 70.	Rooms are lofty.
Houses placarded...	None	By usual method of disinfecting houses.	Six schools, 19 rooms, average 50.	....
No hospital. Isolation in the dwelling houses where disease exists. Houses placarded.	Not compulsory; 300 school children.	From 5 to 10 pounds of sulphur burned in each room.	Four schoolhouses; high school, 101 pupils; model and public schools, 477 pupils, 13 rooms.	230 cubic feet.
....	....	....	....	....
Houses placarded and usual precautions adopted. No isolation hospital.	Yes; 600; 400	....	Two public schools, 7 rooms, total 500; high school, three rooms, total 100; grand total 600.	Sufficient.
No hospital....... ..	No; but it was well attended to. Number of school children, 787. Number of vaccinations about 400.	No disinfection for 1894.	One school, 7 rooms; average in each room, 65.	Cannot say.
The usual method is adopted in isolation of patients. No isolation hospital.	No. Have record of number vaccinated.	Premises placarded. Physicians attending usually do proper disinfection.	Have public school of 7 rooms. No official record of attendance. One high school with 7 or 8 rooms, about 100 students.	Have no information as to this.

TOWNS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and number of employees in each.	Water supply. Where wells are used give character of soil and subsoil.
Forest A.— H.— P.—1,589.	Supplied to all medical men.	Two factories with five employees.	Part of town sandy loam, quicksand with clay bottom, other part mostly clay.
Galt A.—1,477. H.—1,800. P.—7,220.	Teacher not supplied. M. H. O. officer supplied.	38 factories and institutions employing about 1,100 hands.	Some wells are used, majority use town waterworks water, which is perfectly pure, coming from springs through gravel and sand.
Gravenhurst A.— H.— P.—1,765.	Not supplied	Four saw mills running.	Wells are used. Gravel and sandy loam.
Goderich A.— H.— P.—3,462.	Yes	One organ factory, 40 employees.	Artesian wells
Kincardine A.—500. H.—400. P.—3,000.	No forms in use. Schools visited when necessary.	Four factories and institutions, employing 113 hands.	Lake water for general use. Sandy soil.
Lindsay A.— H.— P.—6,227.	....	....	....
Listowel A.— H.— P.—2,546.	Yes. Yes	Ten factories, employees 17.	Wells. Water good. Gravel and clay.
Leamington A.— H.— P.—1,934.	No forms used by M. H. O.	Sash and door factory: number of hands, 8.	Sandy loam. Most of water used for domestic purposes from artesian wells.
Meaford A.— H.— P.—1,797.	Are supplied to all physicians, who generally make use of them.	Seven factories and institutions, employing about 24 hands.	Well water used

TOWNS —*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
No dairy. Supplied generally from farmers.	None within corporation limits.	Burned or buried by contract.	One large tiled drain with branches from it. A few dry earth closets, generally privies.	None.
18 milk vendors. Byres and premises examined by township inspector. Have recommended inspection of cases by a veterinary surgeon.	None in town limits.	By householder.....	No sewage system as yet. Not contract removal. With few exceptions privy pits are used.	Two tanneries, 1 gas, 1 soap factory.
About 70 cows. No inspection.	Two slaughterhouses outside of town. Offal fed to pigs.	By householder.....	No contract. No drains.	None.
Don't know number. No examination.	None	Householder........	....	None.
No dairy in town ...	No slaughterhouses in the town. Two outside of municipality.	Garbage and night soil removed to ground laid out for that purpose and buried four feet deep under the sanitary inspector's instructions.	Only by householder.	None.
....	....	....	....	....
About 30. No	None...............	By householder. Garbage annually removed.	Dry earth closets and privy pits.	None other than gas works.
None..............	No slaughterhouses in the corporation.	By householders....	No dry earth closets.	None.
....	Two slaughterhouses in suburbs. No license. No regulation as to drainage or disposal of offal.	No system as to disposal of garbage. The board has several times placed the matter before the council without success.	No sewers. No system of dry earth closets.	One storage for hides.

TOWNS —*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Mount Forest .... A.— H.— P.—2,500.	T. D. Mickle, M.D., member of board of health but not M. H. O. Charles Boulding, chief constable and sanitary inspector.	Personal inspection by sanitary inspector.	Scarlatina, 3; diphtheria, 6, 2 deaths; typhoid, 7 cases.
Napanee .... A.—1½ square miles. H.— P.—4,000.	Sanitary inspector, E. B. Perry.	Sanitary inspector makes house to house inspection.	Diphtheria, 12 cases and 3 deaths.
Newmarket .... A.— H.— P.—2,143.	Dr. Stewart Scott, M.H.O. Sanitary inspector, Stephen Warren.	Sanitary inspector makes a thorough inspection in the spring and reports to the board.	Scarlatina, 9 cases.....
Niagara Falls .... A.— H.— P.—3,105.	James W. Oliver, M.D. Samuel Ward, sanitary inspector.	By visiting places and premises that require inspection.	No report made to the M. H. O.
North Toronto .... A.— H.— P.—1,426.	Dr. S. R. Richardson, M. H. O., and George H. Lawrence, sanitary inspector.	House to house inspection by sanitary inspector.	Scarlatina, 1; diphtheria, 2; typhoid, 3.
Ottawa, East............... A.— H.— P.—714.	....	....	Six cases of scarlet fever. These were the only contagious diseases reported during the year.
Owen Sound................ A.— H.— P.—7,617.	Allan Cameron, M.D...	....	Scarlet fever 20; deaths, 1; measles, 152; diphtheria, 14; deaths, 1; typhoid, 8; pertussis, 3; total, 197; deaths, 2.

TOWNS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
The usual methods adopted by the medical profession. No hospital.	All parents were notified. About 600 children. Have no record of the number vaccinated in 1894.	By medical profession only, unless as to yards and premises, then the inspector orders copperas, etc., to be used.	Two public and 1 high school, nine rooms; average attendance, 40.	....
Houses are placarded. Disinfection left in physician's hands. No isolation hospital.	Not for several years.	....	Three schools: 1, 6 rooms; 1,7 rooms; 1, 4 rooms; average about 50 for each room.	One 259 feet, one 258 feet.
No isolation hospital. Patients isolated from the rest of the family and houses placarded.	No.................	The woodwork and floors of sick rooms washed with solution bi-chloride of mercury and house fumigated with sulphur under the direction of M. H. O.	Public school, 6 rooms; separate school, 1 room; high school, 4 rooms, but only 3 divisions; about 50 to each room.	Over 250 cubic feet.
By isolation........	Yes; 367...........	By thorough cleansing of premises.	Three schools: high school, 5 rooms, 121 pupils; public school, cannot get report; separate school, 4 rooms, 145 pupils.	260 feet.
Patients kept in room by themselves. Usual disinfectants.	No; 528 on the assessment roll.	....	Two schools: Six rooms and basement in one, and 5 rooms and basement in the others; 4 rooms average 50 in each, 3 rooms average 50 in each.	280 cubic feet.
....	....	....	....	... .
....	....	....	....	....

TOWNS.—*Continued.*

Municipality.	Forms for notification by teachers and H. M. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and subsoil.
Mount Forest .... A.— H.— P. —2,500.	The medical profession are supplied with forms who report to the secretary and he notifies the head masters.	Four factories and institutions, employing about 90 hands.	Wells. Gravel and blue clay.
Napanee .... 1½ square miles. H.— P.—4,000.	Teachers have forms and use them.	No record.............	Principally clay with rock bottom.
Newmarket .... A.— H. P.—2,143.	Not supplied to teachers. Used by medical practitioners.	Six factories and institutions, employing about 150 hands.	Partly from waterworks supplied by artesian wells. Good quality. The well water is a good quality throughout the town.
Niagara Falls .... A.— H.— P.—3,105.	No forms supplied......	Two: one suspender factory, employs 35 hands; one hub factory, employing 45 hands.	Niagara river. Soil varies. Sub-soil mostly clay.
North Toronto .... A.— H.— P.—1,426.	Forms sent to teachers and M. H. O. 1893, but not in 1894.	None	Light, with sand and gravel sub-soil. Wells on highest elevation in town.
Ottawa, East............. A.— H.— P. —714.	....	....	....
Owen Sound..... .... A.— H.— P.—7,617.	....	....	. ...

TOWNS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds of tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act). How licensed and regulated.
One at outskirts of town and one in country. No inspection.	Four at outside of town kept in good order.	Dry earth closets mostly. By householders. No contract.	.. ..	None.
One hundred and sixty-three cattle. None. No cases.	None within corporation.	By householder.....	....	....
Milk is supplied by dairy farms outside the town. No inspection of cows.	None in town.......	Scavenger appointed under contract with the corporation to remove all garbage and night soil.	No system of sewage. Dry earth closets are largely taking the place of privy vaults. Contents of closets and privy pits removed by scavenger.	None.
Don't know. No inspection.	No slaughterhouses in municipality.	Carried out of municipality.	By private sewers emptying in a creek on the Niagara river.	None.
Four hundred and twenty-two on roll. No examination of herds 1894 reported.	Two slaughterhouses licensed; offal carried off the premises in cases, drained into tanks and carried away.	By contract. Householders privileged to bury on premises where same is sufficiently large.	Properties are large enough to dispose of sewage without endangering the health of the persons in the vicinity.	None but slaughterhouses.
....	....	....	....	....
....	....	....	....	....

TOWNS.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Rat Portage................ A.— H.— P.—2,287.	S. S. Scoval, M.D., M.H.O. ; R. B. Donkin, sanitary inspector.	A weekly inspection is made by sanitary inspector. Any complaints can be made in a book kept for that purpose.	Typhoid 10... ....
St. Mary's........... ...... A.—2,676. H.—650. P.—3,151.	W. F. Brown, M.D. ; Richard Lucas, sanitary inspector.	The sanitary inspector visits and inspects the premises of every householder in town.	Scarlatina, 2 cases; diphtheria, 6 cases.
Sault Ste. Marie............ A.— H.— P.—2,900.	O. Keatley, sanitary inspector.	Sanitary inspector has never reported.	Scarlatina, 20 cases; typhoid, 12 cases.
Seaforth. .... A.— H.— P.—2,517.	A. Bethune, M.D. ; S. Stark, inspector.	Town is generally gone over once a year by sanitary inspector.	....
Strathroy .... A.—200. H.— P.—3,200.	G. Henderson, M. D. ; Robt. Miller, sanitary inspector.	....	....
Sudbury. .... A.— H.— P.—	E. Scarf, M.D.........	Personal inspection by health officer weekly.	Diphtheria, 2 ; typhoid, 11.
Thessalon .... A.— H.— P.—612.	Dr. T. J. McCort, M.H.O.; Wm. Higgins, sanitary inspector.	....	Scarlatina, 34 cases and 4 deaths ; typhoid, 2.

TOWNS —*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
No contagious diseases; no isolation hospital.	No; 437 school children.	....	Number of schools, 5; number of rooms, 8; average attendance, 327.	Cubic air space to each, average 235 feet.
No hospital; typhoid cases frequently sent to Stratford hospital.	No................	Doctors report usual methods: burning articles of small value and using disinfectants.	Four public schools, 9 rooms; central 4 rooms, attendance as follows: 54, 62, 55, 67; west ward, 3 rooms, 52, 59, 82; church school, 1 room, 78; lock school, 1 room, 66; separate school, 1 room, 45; collegiate institute, 5 rooms, 36, 44, 44, 35, 15.	Average cubic air space for each pupil in 15 rooms, 257 feet.
There are no facilities for isolating contagious diseases No hospital. Board of Health has been powerless to prevent the spread of scarlet fever.	Vaccination has been compulsory.	Having no M.H.O., this has been left entirely to the attending physicians; some houses where scarlet fever existed have been fumigated with burning sulphur, etc.	Two; 6 in public school and 2 in separate school; attendance about 25 to 50.	....
No isolation hospital.	Not been compulsory; number of children, 792, not known to the Board.	No general system; the direction of the medical attendant is carried out.	Two public schools, 9 rooms,, average attendance in each room about 42.	Public school about 275 feet, collegiate institute, 300 feet.
Houses placarded; no hospital.	No; few, if any, have been vaccinated.	Usual methods......	Three public schools, 12 rooms, average attendance 55 to each; one high school, 5 rooms, average about 40 to each.	Do not know.......
Smallpox hospital ..	No.....	Usual methods are used under supervision of health officer.	Two.	Schools all large and well ventilated.
Confined to their houses; no isolation hospital.	Yes; 220 vaccinated; school children 165, 104 vaccinated.	Fumigation with sulphur and chloride of lime.	One school, 2 rooms, pupils 50 to 70.	....

TOWNS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Rat Portage. A.— H.— P.—2,287.	No forms have been supplied.	One box factory, 8 hands employed; 3 saw mills, 3 planing mills employing 300 hands.	From lake
St. Mary's. A.—2,676. H.—650. P.—3,151.	None	Six woollen mills, 30 employees; foundry, 6 employees; agricultural implements, 40 employees; flax mill, 40 employees; flax mill, 60 employees.	Wells used, clay and sand.
Sault Ste. Marie A.— H.— P.—2,900.	None have been used	No factories; a lumber mill well out of town.	Well water: in some parts the soil is sandy loam, in other parts clay; those having no wells are supplied by the barrel, taken from river.
Seaforth. A.— H.— P.—2,517.	Some supplied, not much use made of them.	One woolen mill, about 30 hands, mostly boys and girls, a few grown up people; 1 cabinet factory, about 50 hands, mostly young men.	Wells; soil, clay loam.
Strathroy A.—200. H.— P.—3,200.	Yes. Yes	Have no statistics	Wells only for domestic use, soil sandy.
Sudbury. A.— H.— P.—	None supplied to health officer.	Sash and door factory and planing mill, employing about 15 hands.	Spring wells, soil and sub-soil sand (first class).
Thessalon A.— H.— P.—612.	Not supplied.	Three planing and saw mills, about 70 employees.	Wells

TOWNS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Milk is supplied from different parties; no inspection; no examination; number of cows supplying milk, 67.	Three slaughterhouses; none licensed; no drainage except natural lay of land; drainage finds its way into Lake of the Woods; offal fed to hogs.	Scavenger is licensed by town who draws garbage, etc., out of the town; carcases of dead animals are buried.	Hotels and boarding houses have pipes leading to the lake which carry the sewage away; a few dry earth closets.	Storage of hides; regular inspection is made by sanitary inspector.
Forty-seven cows; no inspection; no tuberculosis.	Three; none licensed; surface drained; offal fed to pigs.	By householder.....	Only a few dry earth closets; no contract removal.	None.
About 100; no; none.	Two; no drainage; offal is fed to pigs.	Under no regulations; night soil is put in the most convenient places, often a few hundred yards from residents.	There is no system of sewerage.	None except slaughterhouses.
No dairy within municipality.	One at the outside limit of town; no license; not much draining; don't know how offal is disposed of.	By householder.....	A few dry earth closets; sewage generally finds its way into town drains.	None.
Not known; no; none made.	Yes; one; no license required.	Contract.	Taken care of by private parties.	None.
About 35; no system of inspection.	Two; drained in creek; offal buried.	Carted to dumping ground about a mile out of town; by householder.	By dry earth closets and privy pits.	None.
None; private supply; no inspection; no examination of herds.	Two; no license; drained into lake; offal fed to hogs.	Garbage taken to a plot by householder.	Drained to river and lake; no dry earth closets.	None.

TOWNS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Thorold.......... A.—800. H.—600. P.—2,400.	Jas. K. Johnston, M.D.: Thos. Dundas, sanitary inspector.	House to house inspection by sanitary inspector.	Scarlatina, 2; diphtheria, 3 : typhoid 3 and one death.
Trenton.................. A.—1,225. H.— P.—4,500.	J. B. Moran, M.D. Wm. Hinde, sanitary inspector.	House to house inspection.	Scarlatina cases, 18; diphtheria cases, 23; typhoid cases, 2.
Toronto Junction .... A.— H.— P.—4,500.	J. F. Williams, M.D., M. H. O. Sanitary inspector, Samuel Ryding.	Inspection made by sanitary inspector.	Scarlatina, 1; diphtheria, 1; typhoid 11, 1 death.
Uxbridge .... A.—500. H.— P.—2,100.	N. Bascom, M.D. A. Wright, sanitary inspector.	House to house inspection by sanitary inspector.	Typhoid cases, 5.......
Orangeville................ A.— H.— P.—3,150.	Dr. T. W. Simpson, M. H. O. R. Shields, sanitary inspector.	Extent limited. Methods imperfect.	Scarlatina, 3; diphtheria, 8; typhoid, 2.
Peterborough.............. A.— H.— P.—10,680.	John Clarke, M.D., M. H. O. Geo. J. Royell, chief of police, P.C. Adams, Stewart and McGinty, sanitary inspectors.	Sanitary inspectors visit every house in municipality, inspecting yards, premises, etc., issuing notices where necessary; a few days after a second visit is paid.	Scarlatina, 37 cases, 4 deaths; diphtheria, 26 cases, 9 deaths; typhoid, 18 cases, 6 deaths.
Palmerston.............. A.— H.— P.—1,717.	Dr. J. Standish, M.H.O. J. Wesgate, sanitary inspector.	House to house inspection, and special cases attended to when notified.	Ten cases of typhoid and 2 deaths.
Parry Sound .... A.— H.—278. P.—2,000.	John R. Stone, M. H. O. James May.	Insufficient and farcical.	....

TOWNS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Houses placarded...	About 40 vaccinated.	....	Four schools, 12 rooms, average attendance 31.	388 feet ....
None, except separation of patients from family in same house. No hospital.	No. About 660. None reported.	Fumigation of clothing and rooms.	Four	About 200.
Carried out by attending physician. No isolation hospital.	The assessor reports 718 children in town.	Carried out by attending physician.	Three	One hundred feet.
Room containing patient is quarantined. No isolation hospital.	No; 450 public school pupils, 100 high school pupils. None.	Cleansing and fumigation.	Public school, 8 rooms, average in each room, 50; high school, 4 rooms, average about 20.	About 258 cubic feet.
When reported, house placarded, children of household suspended from school. No isolation hospital.	No	Patient isolated, clothing and bedding fumigated with burning sulphur, etc. Patient quarantined for at least 14 days after recovery.	One public school, 1 high school, four teachers.	....
A large number of contagious diseases are now sent to infectious department of Nicholl's hospital. St. Joseph's hospital will in future receive cases as well. Those remaining at home are put in separate rooms.	No	In typhoid fever, stools disinfected by carbolic acid mixtures. In diphtheria, fumigation by sulphur, etc.	Number of schools, 8; number of rooms, 45; average attendance in each room about 50.	About 200.
Isolation of patients as much as possible.	No. About 500. Don't know.	Fumigation, etc.....	One; 8; about 40...	Large, new school with modern improvements.
According to prevailing idea of attendant. No.	So far as board of health could go. Council refused to order vaccine. Information not furnished.	....	Two schools; no information regarding other points.	....

TOWNS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and subsoil.
Thorold A.—800. H.—600. P.—2,400.	None	Knitting factory, 80 employees; casket factory, 35 employees; basket factory, 100 employees	Wells; soil clay
Trenton A.—1,225. H.— P.—4,500.	Printed forms. Yes. Yes.	Seven factories and institutions, employing 600 hands.	
Toronto Junction A.—1. H.— P.—4,500.	Yes	One piano factory, employing 124; 1 Dominion Cut Wood Co., 66; 1 Wood Pulley Co., 54; 1 Wilkinson Plough Co., 58; 1 Worsted and Braid Co., 38; 1 Wire Mattrass Co., 83; 1 Woodenware Co., 35; 1 City Street Railway Co., 17; 1 Can. Pac. Railway Co., 500; 1 Queen City Flour Mills, 40.	Waterworks system; source, Lake Ontario.
Uxbridge A.—500. H.— P.—2,100.	Teachers are not supplied. M. H. O. uses them.	Two foundries, 1 tannery, 1 organ factory, employing in all 60 hands.	Wells. Generally gravel.
Orangeville A.— H.— P.—3,150.	No.		Very inferior. Wells only, a large number of which are contaminated by sewage. Soil generally gravel and sandy loam.
Peterborough A.— H.— P.—10,680.	Have not been found necessary	Two woollen mills, employing 175; Edison's electric light works, Nicholl's hospital, Protestant Home, besides smaller institutions.	Wells. Soil, loamy; subsoil, gravel. Peterborough Water Co. supply from river above town. Good.
Palmerston A.— H.— P.—1,717.	No. No. No.	Ten industrial institutions.	Wells. Soil, clay loam.
Parry Sound A.— H.—278. P.—2,000.	Yes, regularly. Not by teachers, always by M. H. O.	Three lumber mills, shingle mill and tannery.	Waterworks generally.

TOWNS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
None	None	By householder	Some dry earth closets and some vaults; attended to by householder.	One tallow dealer.
Fifteen to 20. No inspection.	None	Buried in a nuisance ground. Disinfected with lime.	No regular system	None.
About 100. Periodical inspection made by sanitary inspector and reports things satisfactory.	None in town	By contract	Partly by sewers and partly by closets. Removed by contract.	None.
About 100. No. None.	Three. None. Not drained. Offal fed to pigs in slaughter yard.	Removed by householders.	Some privy pits, some earth closets. No contract removal.	None.
....	....	By householder only.	In a few instances by dry earth closets. No town sewerage.	One tannery.
About 250. Not generally speaking. Very few complaints as to milk.	None. Mathew's pork packing establishment. Drained into the river.	By householder	Dry earth closets. Some into sewer running into river. Regular removals.	Pork packing house, Peterborough Gas Mfg. Co. Seldom complained of.
About 50, owned by different parties. No inspection. No examination.	Three outside of corporation inspected frequently. None. Surface drainage. Fed to hogs.	Buried by householder.	No contract removal.	None.
No information about dairy cows. No inspection. No examination.	Four. Not licensed. Drained on surface. Offal boiled and fed to pigs.	By householder	A few earth closets. No.	None.

TOWNS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Paris......................... A.— H.— P.—3,011.	Dr. D. Dunton, M.H.O. J. S. Green.	House to house inspection.	Scarlatina, 8 cases; diphtheria 3, 1 death; typhoid, 2.
Pembroke................. A.— H.— P.—4,188.	Dr. W. W. Dickson, M. H.O.; John Campbell, sanitary inspector.	House to house inspection as circumstances require.	Scarlatina 30, 2 deaths; diphtheria 33, 3 deaths; typhoid 12, 4 deaths.
Prescott................... A.—1 square mile. H.—700. P.—3,000.	Dr. W. P. Buckley, M. H.O.; Robert Smith, sanitary inspector.	....	....
Preston..................... A.— H.— P.—1,799.	Dr. N. B. Duck, M.H. O.; C. J. Ross, sanitary inspector.	House to house inspection.	Scarlatina, 3; diphtheria, 4; typhoid, 3.
Picton... .... A.— H.— P.—	Henry B. Evans, M.D., M.H.O.; Nelson Babbit, sanitary inspector.	From observation and complaints.	Scarlatina, 5; diphtheria, 2.
Simcoe .... A.— H.— P.—2,956.	James Hayes, M.H.O...	....	We had an unusually healthy year up to the last two months when a large number of cases of malaria fever developed, together with a few cases of typhoid. The latter fever is not very common in this neighborhood, and I have not as yet been able to trace its origin.

TOWNS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
No isolation hospital. Patients are isolated as well as possible in their homes.	Yes, among the school children. This year about 100 were vaccinated.	Each physician in charge gives orders for the case as he sees fit, unless there is a death, then the M. H. O. gives instructions for burial as recommended by provincial board.	One high school with 63 attendants; 3 public schools with 491 in attendance; one separate school with 65 in attendance.	High school, average 598 cubic feet; public school, 190 cubic feet; separate school, 175 cubic feet.
Confinement to one room, and removal of all inmates. Nurses not permitted to go out among other members of the family. No isolation hospital.	No; 1,010 school children in municipality; 480 children attending school have no marks of vaccination.	Fumigations with sulphur; washing walls with sublimate solutions, etc.	Five schools, 21 rooms; 1 convent, having 38 pupils, with large airy rooms.	....
No isolation hospital; houses placarded.	No..	Done by attending physicians.	One public school, 7 rooms, attendance 390; high school, 3 rooms, 80 pupils; separate school, 4 rooms, 150 in attendance.	Average cubic air space to each pupil in public school, 177 feet, separate school 412 feet.
Isolated at their houses; no isolation hospital.	No; don't know....	....	Two public schools, 6 divisions, average 50 pupils in each division; 1 separate school, average 50 in division.	....
Isolation in their dwelling; placarded; no isolation hospital.	No	By ordinary methods as recommended by Provincial Board of Health.	One public school, 1 high school, 1 separate school; total attendance, 391.	The usual average of a well ventilated school.
....	....	....	....	....

TOWNS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Paris A.— H.— P.—3,011.	Forms are supplied to physicians and sanitary inspector.	Woollen manufactures, wincey do alabastine do needle do nickel plating do carpet do etc., employing about 450 hands.	The public water supply is pumped from springs. A number of wells are in use. The soil is loamy, with a gravel sub-strata.
Pembroke A.— H.— P.—4,188.	Yes	No factories of any importance.	Town waterworks, supply obtained from Ottawa river.
Prescott A.—1 square mile. H.—700. P.—3,000.		Five factories employing 65 hands.	Soil in sandy loam, some parts clay.
Preston A.— H.— P.—1,799.	None	Sixteen factories and institutions employing 550 hands.	Gravel, rock and clay land.
Picton A.— H.— P.—	No; No	Two canning factories employing 200; 2 seed houses, 1 foundry.	From bay by waterworks, sandy loam about 12 feet deep, then rock bottom.
Simcoe A.— H.— P.—2,956.			

TOWNS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds of tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
About 70. A conviction was made by selling diseased meat on the market.	None in town.......	Garbage is dumped into the Grand river by householders. Night soil is removed by contract.	There is no system. There is a good surface drainage. Dry earth closets. Under contract. Emptied monthly.	None.
Two hundred dairy cows; no medical or veterinary examination for tuberculosis.	One slaughterhouse within limits; drained into Muskrat river; offal fed to pigs.	Garbage and night soil carted by private parties to a dumping ground one mile outside of town.	No sewage system; dry earth closets in majority of cases; removed by householders.	One slaughterhouse permitted without license, but inspected and kept in a satisfactory state.
Sixty cows; no examination for tuberculosis.	None within limits of corporation.	By contract generally, in some cases by householder.	Dry earth closets; no contract removal; done by private individuals.	One building for storage of hides.
Twelve; no inspection.	None......	Don't know	None......	None.
Milk supplied from farms outside of corporation; no; none.	None in the municipality.	By contract	Dry earth closets; Yes.	None.
....	....	....	....	....

TOWNS.—*Concluded.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Lindsay A.— H.— P.—6,227.	J. McAlpin, M.D., M.H.O.	Thorough inspection; a committee was appointed for each ward exercising an effectual supervision of sanitary matters.	Diphtheria, 52 cases, 13 deaths; scarlet fever, 5 cases; typhoid, 2 cases.
Wallaceburg A.— H.— P.—2,434.	W. W. Hay, M.D., M.H.O.; James Thomas, sanitary inspector.	House to house inspection in spring and fall.	Always considerable typhoid fever here till the fall weather comes.
Walkerton A.—300. H.— P.—3,000.	Geo. J. Dickison, M.H.O.; E. Briggs, sanitary inspector.	House to house inspection.	Diphtheria, 20 cases; 4 deaths; typhoid, 2 cases.
Whitby A.— H.— P.—2,668.	D. P. Bogart, M.D., M.H.O.; Wm. Calverley, sanitary inspector.	House to house inspection by sanitary inspector.	Diphtheria, 4 cases; 1 death.
Wingham A.— H.— P.—2,200.	W. B. Towler, M.D	....	There was one case of diphtheria. Prompt action was taken to isolate the patient and family so that there was no further spread of the disease. The total mortality in a population of 2,200 of 13.650 per 1,000, or 1.365 per cent.
Wiarton A.— H.— P.—2,002.	Dr. R. M. Fisher, M.H.O.; Henry W. Hill, sanitary inspector.	Make two visits each year.	None

TOWNS.—*Concluded.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Thirty-five houses were placarded; the need of an isolation hospital has been fully demonstrated this year.	....	....	....	....
No isolation hospital; patients isolated at home; placards used.	Yes, to a certain extent The schools on the recommendation of Board of Health made it compulsory; about 500 children were vaccinated.	Carried out as near as possible to the directions given in pamphlet issued by Provincial Board of Health.	Two public and one separate schools; 7 rooms in one public school, 2 in the other, and 2 in separate schools; on an average 40 attend each.	500 cubic feet per pupil.
No isolation hospital; patients are isolated in room at the top of house if possible; no others allowed to enter room except those in attendance.	No; 608 children are on the public school roll; 155 at separate school, and 144 at high school; 25 vaccinated in 1894.	Majority of medical men use carbolic acid, chloride of lime and sulphur fumes.	One public school, 10 rooms, attendance 608; 1 separate school, 3 rooms, attendance 155; high school, 144 in attendance.	Public school, 194 cubic ft.; separate school, 158; and high school, 409.
None	No; number of children, 837; none reported.	House disinfection by medical attendant.	Five schools, collegiate institutes, four rooms, total attendance 130; Henry street school, 4 rooms, 152 in attendance; model school, 4 rooms, 119 in attendance; Dufferin school, 2 rooms, 67 in attendance; separate school, 1 room, 36 in attendance.	Collegiate institute, 354 feet; Henry street school, 267; Model, 297; Dufferin, 344; separate 297.
....	....	....	....	....
None	No vaccination in 1894: total children at school, 455.	Having none, no appliances required.	One school, 7 rooms, total attendance 455.	Cannot say..........

TOWNS.—*Concluded.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Lindsay A.— H.— P.—6,227.			
Wallaceburg A.— H.— P.—2,434.	No	Two stave and hoop mills employing 100 hands; 1 canning factory employing 100 hands during summer months.	Water supply, well water, soil clay loam, under which is a strata of quicksand and gravel, and then blue clay. The water is taken from the sand and gravel strata.
Walkerton. A.—300. H.— P.—3,000.	Yes; Yes	Two principal, (*a*) sash and door factory employing about 80 hands; (*b*) chair factory employing 125 hands; many other smaller ones.	Waterworks, first class spring water sufficient for all purposes; wells are also used; sandy and clay loam with gravelly sub-soil.
Whitby A.— H.— P.—2,668.	Yes; M.H.O	One foundry, 16 hands; 1 tannery, 45 hands; 1 harness hardware, 30 hands; 1 fruit evaporator, 75 hands.	Wells; soil clay loam, sub-soil solid clay and hard pan.
Wingham A.— H.— P.—2,200.			
Wiarton A.— H.— P.—2,002.	None	One furniture, 34 employees; cheese factory during the season; 5 saw mills, 100 employees.	Water taken from Georgian bay by pumping under the system of waterworks; a few wells used.

TOWNS.—*Concluded.*

Number of dairy cows. Is there medical, or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
A milk inspector has been appointed.	....	A dumping ground has been purchased by town for disposal of garbage and night soil.	....	....
None..................	None within the corporation.	By householder.....	Several sewers for surface drainage; outlet in the Sydenham river; only one dry earth closet in the village.	None.
Over 100; no; no examination.	Three; drained into river; offal carted out of town and used on farm.	Night soil removed by contract and taken to a farm; garbage taken out of town to a dump.	No proper sewerage system; some dry earth closets, and removed by householder's contract.	Slaughterhouses are the only ones under town regulations and by-laws.
None	Three; offal spread on land as fertilizer.	By householder.....	No system..........	None.
....	....	....	....	....
No dairy cows......	Three slaughterhouses outside of town and inspected by Local Board of Health.	Under contract; to be removed at a late hour by scavenger.	By both.......... ..	None.

VILLAGES.

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Allandale A.—500. H.—215. P.—1,043.	No M. H. O.; Edward Burns, sanitary inspector.	Sanitary inspector keeps a careful watch.	Scarlatina, 4; deaths, 2; diphtheria, 4; deaths, 3; typhoid, 4.
Ailsa Craig A.—50. H.—200. P.—750.	John Gunn, M.D., M. H. O.	In previous years the local board made house to house inspection, but not carried out this year.	None
Alvinston A.—450. H.— P.—1,200.	Dr. A. McKinnon, M. H. O.; Neil Patterson, sanitary inspector.	Sanitary inspector has a supervision over the town.	Scarlatina, 3; typhoid, 2.
Ayr A.— H.— P.—959.	Dr. Meldrum, M. H. O.; John Swan, sanitary inspector.	Monthly and sometimes weekly inspection.	Scarlatina, 4; typhoid, 3.
Bath A.— H.—110. P.—448.	H. S. Northmore, M.D.; F. Wiskins, sanitary inspector.	Inspected thoroughly spring and fall.	None
Bayfield A.— H.—175. P.—680.	Dr. R. Stanbury, M.H.O. Wm. Whiddon, sanitary inspector.	Inspection made from house to house.	None
Beaverton A.—850. H.— P.—850.	Dr. A. Grant, M. H. O.; I. S. McMillan, sanitary inspector.	House to house inspection made in May and October.	None
Beamsville A — H.— P. —963.	C. A. D. Fairfield, M. H. O.	House to house inspection.	No contagious diseases existed this year. The health of the village during the year has been exceptionally good.
Blyth A.— H.— P.—921.	Dr. Carder, M. H. O.; James Davis, sanitary inspector.	Thorough personal inspection during spring and summer months.	

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
House placarded. Other inmates protected by removal, etc., as ordered by the physician. No isolation hospital.	Yes; in schools; 250 children between 5 and 16; 100 vaccinated.	Houses infected ordered to be disinfected by owner under supervision of sanitary inspector.	One school; 3 rooms; 50 in each.	240 feet ....
None	No; only in name; about 150 children; vaccination has been shamefully neglected.	None	One; 3 rooms; about 50.	About 250 to 300 feet.
No isolation hospital. Placards placed on the house.	No..................	House fumigated as directed by M. H. O.	One school; 4 rooms; from 25 to 60.	....
Contagious diseases have been isolated as much as possible. Have no hospital.	Yes; 221 attending school; all vaccinated.	Have no regular system.	One school; 5 rooms; attendance 190.	234 cubic feet for each pupil.
No hospital	No; none	No contagious diseases.	One school; 3 rooms; 30 pupils in each.	....
....	No; 131 school children.	....	One school with two rooms; attendance in each, 45.	203 feet to each pupil.
....	Yes; 137; 15	....	One school; 3 rooms; No. 1, 44; No. 2, 42; No. 3, 51.	400 feet ....
....	....	....	....	....
....	No	Not any...........	Two schools; three rooms; No. 1, one room, attendance 75: No. 2, two rooms, attendance 32 and 51.	No. 1 room, 156 cubic feet; No. 2, 273 cubic feet; No. 3, 184 cubic feet.

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and H. M. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Allandale A.—500. H.—215. P.—1,043.	No	None	Surface and artesian wells; soil, sand with gravel bottom; layer of black muck on top in lower places.
Ailsa Craig A.—50. H.—200. P.—750.	To M. H. O. and other medical men.	Three factories; 1 apple evaporator, 1 flax mill, 1 saw mill.	Wells: soil, loam and gravel upon a strata of solid clay.
Alvinston A.—450. H.— P.—1,200.	No	One woollen factory employing 4 hands; 1 stave factory employing 20 hands.	Good wells; sandy soil and gravel sub-soil.
Ayr A.— H.— P.—959.	No forms are in use	Five; foundry, plough factory, 2 planing mills and flour mill.	Wells and springs; loam on top; sub-soil, sand and gravel.
Bath A.— H.—110. P.—448.	None supplied	None	Mostly bay water used
Bayfield A.—1,750. H.—175. P.—680.	None required	None	Soil, quicksand
Beaverton A.—850. H.— P.—850.	None supplied	Seven; tannery, woollen mill, flour mill, planing factory, carriage works and pottery.	Clay loam; clay sub-soil and rock.
Beamsville A.— H.— P.—963.			
Blyth A.— H.— P.—921.	Not any	Woollen factory, 6 hands.	Wells; soil, sandy loam; sub-soil, clay.

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses: Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
45 dairy cows; no medical or veterinary inspection or examination under authority of local board.	None	Householder........	... .	None.
About 50; no; none.	None in the municipality; 2 outside; no license; no inspection; no drainage; offal fed to hogs	Corporation dump near river; night soil taken ½ mile from town; removed by contract annually.	Contract removal...	None.
The dairy is kept out of village; some families keep a cow; no inspection.	One in the village and one adjacent to the village; kept clean and regularly inspected by sanitary inspector.	Drawn out of village by a scavenger and put into a deep pit.	The same as night soil; nearly all are using dry earth closets; no contract; each householder pays as agreed upon by scavenger.	None.
Some few cows are kept in village; are under inspection of health officer; the chief supply of milk comes from outside.	Three; offal fed to hogs.	Disposed of by householder.	Have no sewage system.	None.
None	Two outside the village.	By householder	Mostly dry earth closets; no contract.	None.
None	None	By householder	None	None.
12; no; none	None in the corporation.	By householder; generally burnt.	Dry earth closets; removed by house holder.	None.
... .	....	. ...	....	....
Not any...........	None	By householder	Removed by occupant.	Not any.

VILLAGES.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Bolton A.—750. H.—180. P.—750.	W. J. Lepper, M. H. O ; S. A. Walford, sanitary inspector.	General inspection during May, June and July.	
Brighton A.— H.— P.—1,368.	W. B. H. Dean, M. D., M.H.O.; Peter Davidson, sanitary inspector.	Only when complaints are made to some members of the board.	Typhoid, 4 cases
Burk's Falls A.— H.— P.—370.	C. Campbell, M.D., M. H. O. ; W. A. Kelsey, sanitary inspector.	Annual inspection is made by inspector every spring ; owners of all houses found in an unsanitary condition are notified to remove such condition, etc.	Scarlatina, 7 ; diphtheria, 1.
Burlington A.— H.— P.—1,261.	A. H. Speers, M.D., M. H. O ; Joseph Anderson, sanitary inspector.	House to house inspection by sanitary inspector.	Diphtheria, 1 ; typhoid, 1.
Cardinal A.— H.— P.—967.	J. D. R. Williams, M.D., M. H. O.; D. McGee, sanitary inspector.	No inspection except when complaints are made.	
Casselman A.—1,200. H.— P.—935.	J. N. Couple, sanitary inspector.		Scarlatina, 1
Chesley A.— H. – P.—1,363.	G. Cook, M.D., M.H.O.; R. J. Fallis, sanitary inspector.	General inspection once a year.	Scarlatina, 6 ; diphtheria, 30.
Chesterville A.—500. H.—200. P.—750.	L. Smith, sanitary inspector.	House to house inspection.	Scarlatina, 5; diphtheria, 1 ; typhoid, 1.
Chippawa A.—500. H.—137. P.—521.	M. C Dewar, M. D., M. H. O.		Scarlatina, 16
Clifford A.— H.—150. P.—600.	Hugh Ross, M.D.; H. Torrance, sanitary inspector.	House to house inspection is made by sanitary inspector twice a year ; drinking water is tested by medical men from samples.	A few cases of typhoid.
Creemore A.— H.— P.—770.	Dr. Kirkland, M.H.O.; Wm. Boyle, sanitary inspector.	Sanitary inspector made general inspection twice a year.	Diphtheria cases, 30 ; 10 deaths.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Confining patients to one house and allowing no communication with the public; no isolation hospital.	No; none vaccinated.	No contagious diseases; no occasion for disinfection.	One school; 4 rooms; about 40 average attendance.	Each room is large and well ventilated.
....	No; about 225; none vaccinated.	....	Two schools; 4 rooms in one and two in the other.	....
Isolation of patients in the house; no isolation hospital.	No; 120 children; number vaccinated, 50.	Room is fumigated with sulphur; the walls washed and whitened.	One school; 3 rooms; attendance in each room, 30, 40 and 50 respectively.	Average of cubic air space in rooms, 291, 284, 160.
Isolation in house; no isolation hospital.	No; none	Fumigation by sulphur and carbolic acid.	Two schools; 6 rooms; average attendance, 45.	About 250 feet .....
No isolation hospital at present; tolerably efficient domestic care.	Nominally; no returns of vaccination, 1894, but the practice is general.	Fumigation by sulphur.	One school; 5 rooms; 40 to 50.	Have not the figures; school accommod'n good; ample room and good building.
....	No.	None	Two schools; 1 with 4 rooms, attendance 115; 1 with 1 room, 25.	....
Complete isolation with use of disinfectants.	No; none vaccinated	Isolation, cleaning up and disinfectants.	One school; 5 rooms; 1st, 47; 2nd, 60; 3rd, 57; 4th, 52; 5th, 68.	196 feet ... .
No isolation hospital; isolation of patients and attendants.	No; 150 pupils; none vaccinated.	Thorough cleansing and free use of lime.	One school; 4 rooms.	200 feet ....
Houses placarded; patients confined to room; no isolation hospital.	Yes; number vaccinated, 32; all others vaccinated within 5 years.	Disinfection by sulphur fumes of room and all articles; boiling of bedding and clothing.	One school; 2 rooms; No. 1 room, 49; No. 2, 55.	206 feet ....
No isolation hospital	No	Disinfection of contagious diseases is performed by the doctor in attendance.	One school; 3 rooms.	....
Patients are isolated; have no hospital.	No	Fumigation	One school; 4 rooms.	....

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Bolton A.—750. H.—180. P.—750.	Yes; when necessary	Five factories; grist mill, 6 hands; 2 foundries, 9 hands; 1 planing mill, 2 hands; 1 woollen mill, 25 hands.	By wells; clay soil; gravel sub-soil.
Brighton A.— H.— P.—1,368.			From wells; soil, hard pan, clay and sand.
Burk's Falls A.— H.— P.—370.	Yes	Five factories; 1 saw mill, 25 hands; 1 steam saw mill, 12 hands; 1 shingle mill, 10 hands; 1 planing mill, 11 hands; 1 creamery, 2 hands.	Wells; sandy loam
Burlington A.— H.— P.—1,261.	None; not supplied	One; Burlington Mfg. Co., mfrs. wringers, employ 12 hands.	Wells; sandy soil with rock bottom.
Cardinal A.— H.— P.—967.	Occasionally	Starch factory and glucose factory, about 100 employees in all.	Wells; partly sandy, partly gravel; sub-soil, clay and gravel.
Casselman A.—1,200. H.— P.—935.	None	Two saw mills, 1 cheese factory, 1 fanning mill shop; total employees, 10.	Wells; soil, loamy; sub-soil, gravel.
Chesley A.— H.— P.—1,363.		Six; 2 sash and door, 19 hands; 1 furniture, 90 hands; 1 woollen mill, 10 hands; 1 tannery, 12 hands; 1 firkin, 8 hands.	Wells; clay loam with clay sub soil, interspersed with gravel and sand.
Chesterville A.—500. H.—200. P.—750.			Wells; clay soil
Chippawa A.—500. H.—137. P.—521.	Yes		Wells; clay sub-soil
Clifford A.— H.—150. P.—600.			Wells
Creemore A.— H.— P.—770.	Yes	One planing factory, 5 hands employed.	Wells; soil gravelly

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Six cows; no; no examination.	Two slaughterhouses not licensed, but permitted; no special drain; offal carried away.	Only by householder	Removed by private parties to farms.	Two slaughterhouses not licensed, but inspected and kept in sanitary condition.
80 to 100; no inspection.	Two; are isolated; offal fed to dogs and hogs.	Householders dispose as they see fit.	Privies, boxes and ground vaults.	None.
None	None within the corporation.	Householder........	No system of removal.	One hide storage, subject to inspection and regulations of inspector.
About 20; no inspection; no examination for tuberculosis.	One; no license; offal used for fertilizing.	By householder only.	Some dry earth closets and some privy pits; removed by householder.	None.
Between 80 and 100; no inspection; no tuberculosis known.	Two; not licensed; well isolated; offal consumed by pigs and converted into manure in barnyards	By householder	No sewage system; no contract removal.	None.
20; no inspection...	One; no license: offal disposed of by fire.	....	By drains	None.
About 20; no inspection.	Two slaughterhouses; none licensed; offal disposed of by being burned or thrown in river.	By burning and burying; privy pits are used; no means of disposal of night soil.	A sewer pipe through village; no dry earth closets; no contract removal.	....
150 cows; no inspection.	Outside of municipality.	By householders....	No sewage system ..	None.
None	None	By householder	By drains	None.
....	One in use; no license required.	By householder	Ordinary closets	None.
None	None	Householder........	Some dry earth closets.	None.

VILLAGES.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Colborne Village .... A.—1,046. H.—250. P.—1,024.	R. Thorburn, M.D., M. H.O.; W. H. Smith, sanitary inspector.	Whenever necessary by sanitary inspector and M.H.O.	None..................
Delhi Village .... A.— H.— P.—850.	J. F. Honsberger, M.D., M. H. O.	One inspection of premises by sanitary inspector, and further inspections upon complaints made to inspector or local board.	None..............
Dundalk .... A.—400. H.—150. P.—700.	Jas. McWilliams, M.D., M.H.O.; W. H. Paterson, sanitary inspector.	House to house inspection by board and sanitary inspector.	Diphtheria, 4 or 5 cases; 1 death.
Dunnville .... A.— H.— P.—1,875.	Dr. N. Hopkins, M. H. O.; M. A. Stevens, sanitary inspector.	House to house inspection once a year.	Scarlatina, 14 cases; diphtheria, 1 case.
Eganville .... A.— H.— P.—754.	J. C. Shannonhouse, M.D , M. H. O.; P. D. Campbell, sanitary inspector.	Inspection of all premises in May.	....
Elmira .... A.— H.— P.—	Dr. Ullyatt, M. H. C.; I. E. Bowman, sanitary inspector.	A general and thorough inspection made in May and September.	Scarlatina, 1, death, 1; typhoid, 2, no deaths.
Elora .. .. A.— H.—280. P.—1,241.	David Geddes, sanitary inspector.	A thorough inspection in May.	None ....
Embro .... A.— H.—280. P.—700.	J. Ross, M.D., M.H.O.; G. C. McKay, sanitary inspector.	House to house inspection in June; casual visits at other times, as may be deemed necessary.	None ....

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Families are not permitted to leave their own houses. No hospital.	No; between 5 and 21 years of age, 275. Only a few.	Ordinary means only.	One; six rooms, No. 1, 40 pupils. " 2, 10 " " 3, 45 " " 4, 40 " " 5, 50 " " 6, 30 "	No. 1, 360 cubic feet. " 2, 1,440 " " 3, 300 " " 4, 360 " " 5, 280 " " 6, 480 "
No hospital	No; none vaccinated.	No contagious diseases.	One; three rooms, average about 40 in each.	Upwards of 250 cubic feet.
No isolation; no isolation hospital.	No; none	None except what may be carried out by medical attendant.	One school, 3 rooms.	From 500 to 600 cubic feet.
Home isolation only.	No; no; in high school about 33 per cent. have been vaccinated; public school about same average.	A liberal use of disinfectants, principally carbolic acid.	One public school, 7 rooms; attendance based on last month, 310; high school, 4 rooms.	About 200 cubic feet air space to each pupil.
No hospital; houses placarded.	Not compulsory	....	One public school, 3 rooms: No. 1, 42 pupils. " 2, 47 " " 3, 69 " Separate school, 3 rooms: No. 1, 53 pupils. " 2, 40 " " 3, 20 "	Public school, average 213 cubic feet to each pupil; seperate school, average 143.
None	Yes; about 300; about 125 vaccinated in 1894.	....	One school, 5 rooms: Div. 1. 30 pupils. " 2, 43 " " 3, 51 " " 4, 57 " " 5, 60 "	236 feet ....
None required......	No................	....	One high school, 3 rooms, 20 in each; 1 public school, 4 rooms, 50 in each; 1 separate school, 1 room, 40.	Over 300 cubic feet.
Placarding and street quarantine at home; no hospital.	Yes; total in municipality, 168; vaccinated in 1894, 97.	By sulphurous acid; all rooms closed and sulphur fumes burned, etc.	One school, 2 rooms, attendance, 73-85	About 200 feet per pupil.

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and H. M. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and subsoil.
Colborne Village A.—1,046. H.—250. P.—1,024.	No special forms	No factories	Wells; mostly clay gravel.
Delhi Village A.— H.— P.—850.	None	Five factories; canning factory, 300 to 400 hands; mitt and robe factory, 12 hands; granite and marble works, 15 hands; sash, door and planing mills, 12 hands; flour mills, 10 hands.	Excellent wells; water exceptionally pure and free from surface pollutions; soil, sand and gravel.
Dundalk A.—400. H.—150. P.—700.	None; neither supplied.	None	Wells; clay loam with gravel bottom.
Dunnville A.— H.— P.—1,875.	Medical practitioners are supplied	Factories employ about 5 or 6 men each.	Grand River; some wells; loam, black, with sand and clay sub-soil.
Eganville A.— H.— P.—754.	None	One woollen factory, 12 hands; 1 steam sash and door factory, 9 hands; 1 water-power sash and door factory, 6 hands.	Wells; sandy loam, subsoil, limestone.
Elmira A.— H.— P.—	Yes; yes	Four; foundry and implement works, 14 hands; cabinet factory, 11 hands; woollen factory, 12 hands; grist, flour, saw mill, etc., 15 hands.	Clay, loam and gravel ..
Elora A.— H.—280. P.—1,241.	None	Organ factory, 12 hands; yarn factory, 15 hands; furniture factory, 30 hands; woollen factory, 5 hands; flax, 3 or 4 part of the year.	Wells; clay loam over rock.
Embro A.— H.—280. P.—700.	Forms supplied	Two; flax mill, 15 hands; oat meal mill, 6 hands.	Wells; soil, heavy loam, sub-soil, stiff clay, quality of water good.

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act). How licensed and regulated.
No dairy in the village.	None in village	Taken to isolated places by householder.	Ordinary methods..	None.
Twenty in village; no; none.	None in village	By householder; many have adopted the dry earth closet system.	No contract removal.	None.
Cannot say as to number of cows; no medical or veterinary inspection.	Two; both outside of corporation; offal fed to hogs or burned.	By householder.....	Principally dry earth closets.	A tannery and milk factory inside the corporation; no license; inspection by board.
Dairy cows, about 25; no inspection.	None	Each householder disposes of garbage and night soil.	Some dry-earth closets; but principally vaults are used.	One tannery, which is kept in good condition.
... .	None	Householder........	Drainage	....
Ninety cows; no inspection.	Two slaughterhouses; none licensed; offal deposited in the river and fed to pigs.	By householder	None	None.
No dairies; no inspection.	One: no license; well isolated.	Householder........	Mostly put on gardens.	None.
About 40, owned by private families; no inspection,	One; built on sand hillside; no drainage required; offal consumed by swine.	By householder	Dry earth; no contract for removal; cared for by householder under supervision of board of health.	None.

VILLAGES —*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Erin A.— H.— P.—536.	Henry McNaughton, M. H. O.		Scarlatina, 2 cases; diphtheria, 31; deaths, 8; recoveries, 20.
Exeter Village A.—1,200. H.—400. P.—1,800.	T. A. Amos, M.D., M. H. O.; Jas. Creech, sanitary inspector.	Yearly inspection	None
Garden Island A.—77. H.—65. P.—412.	Dr. Garrett, M. H. O.; John Garland, Samuel Kennedy, sanitary inspector.	Yearly house to house inspection.	None
Glencoe A.—500. H.—300. P.—923.	W. G. Lumley, M.D., M. H. O; John Hills, sanitary inspector.	General inspection by sanitary inspector; special inspection by order of the board of health.	Typhoid, 8 cases
Gore Bay A.— H.— P.—516.	J. Johnston, M.D., M. H. O.; W. J. Totten, sanitary inspector.	By personal examination of inspector.	None
Fenelon Falls A.— H.— P.—1,081.	A. Wilson, M.D., M. H. O.; P. Kelly, sanitary inspector.	Sanitary inspector visits every house in the spring time.	Scarlatina, 20 cases
Fort Erie A.— H.— P.—930.	Wm. Douglas, M.D., M. H. O.; D. Church, sanitary inspector.	Inspection made from house to house by sanitary inspector.	Typhoid, 2; scarlatina, 2.
Havelock A.— H.— P.—	Dr. Fowler, M. H. O., F. S. Edwarts, sanitary inspector.		
Holland Landing A.— H.— P.—442.	Dr. Stephenson, M.H.O.	No general inspection	None
Hastings A.— H.— P.—		The usual order was issued in the spring for the cleaning of yards and premises; the inspector made a house to house inspection.	

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Diphtheria originated in a rag pile in Orangeville, everything was done to limit the spread of the disease by isolation and disinfection.	....	....	The school was closed from 14th Sept. to 19th Nov.	....
None	No; 564 school children, 249 vaccinated.	....	One school, 7 rooms, 71 pupils.	Average, 270 cubic feet to each pupil.
....	No: but council had school children vaccinated free this year.	....	One; 3 rooms, average attendance, 31.	....
No hospital; six cases of typhoid in one house; the inmates were kept fairly well quarantined.	No; but children have been pretty well vaccinated; number of school children about 200	Disinfection observed in the house where fever occurred; only carried out by the attending physician.	One public school, 8 rooms; 1 high school, 4 rooms; attendance per room about 35.	Rooms about 24x40x 14.
Never had any contagious diseases as yet.	Yes; about 125 school population; 100 vaccinated.	None	One; 3 rooms, 27-35-45 in each room.	About 250 cubic feet.
No hospital; in cases of diphtheria the whole family are quarantined; in scarlatina ordinary precautions are taken.	To a certain extent only; about 175 children were vaccinated out of 335; the results of vaccination were severe.	By washing with bichloride and sulphur solution, and finally fumigation with sulphurous acid fumes.	Two schools, 2 and 4 rooms respectively.	Average cubic air space to each pupil 242 feet.
None	Yes; 200; about one-half.	None	One; 3 rooms, about 60 in each.	About 250 feet .....
None	No	None	One school; 3 rooms, attendance, 45, 53, 47, respectively.	454 feet.
No isolation	No; 150 pupils; none.	None	Two; 2 rooms, average about 50.	800 cubic feet ......
....	....	....	....	....

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Erin A.— H.— P.—536			
Exeter Village A.—1,200. H—400. P.—1,800.	None	None	Springs; soil, blue clay, sub-soil, gravel.
Garden Island A.—77. H.—65. P.—412.		Shipyard, employing 20 hands; machine shop, 10; boiler shop, 8; blacksmith shops, 4 men.	River St. Lawrence
Glencoe A.—500. H.—300. P.—923.	Not supplied	Six; 1 woollen factory, 4 hands; 1 planing mill, 4 hands; 1 planing mill, 5 hands; 1 machine shop, 3 hands; 1 flour mill, 6 hands; 1 flour mill, 4 hands.	Wells; clay loam, clay sub-soil.
Gore Bay A.— H.— P.—516.	No; no	Two; sash factory, 5 hands; saw mill, 20 hands.	Lake and wells; clay and limestone rock.
Fenelon Falls A.— H.— P.—1,081.	A written note only; teachers are informed to report any child whom they suspect.	Pulp mills, 35 to 60 hands; 3 saw mills.	Wells chiefly; limestone rock; a part of the village is supplied from natural spring conveyed in pipes.
Fort Erie A.— H.— P.—930.	Yes; yes	None	Mostly from wells; soil and sub-soil principally sand.
Havelock A.— H.— P.—	None		
Holland Landing A.— H.— P.—442.	None	None	Mostly artesian wells ...
Hastings A.— H.— P.—			

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: (Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades (See sec. 63 Public Health Act.) How licensed and regulated.
....	....	....	....	....
None	None	Carried away; householder.	Dry earth and common pits; no contract removal.	None.
Twelve cows; no inspection.	One................	By householder	Privy pits emptied annually.	None.
About 12; no inspection; no disease suspected.	None in village	By contract	Closets, contract removal.	None.
No dairy	Two; no license; outside of town limits; offal, etc., fed to pigs.	Garbage dumped out of town limits; night soil carted away for manure.	No sewerage; no dry earth closets.	None.
No dairy; most families have their own cows; no inspection made.	None inside the corporation.	By householder; some buried in sandy ground; farmers use some as manure.	No regular way of disposing of sewage here; every householder is expected to keep his place clean.	None.
About 70 cows; none; none.	None	By householder	By dry earth closets.	None.
94 cows	None	By householder	....	....
Sixty cows; no; none.	None	By householder.....	Earth closets	None.
....	....	....	....	....

VILLAGES.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Huntsville A.— H.— P.—1,468.	J. W. Gledhill	House to house inspection.	Scarlet fever, 9 cases; diphtheria, 4; typhoid, 3.
Kingsville A.— H.— P.—1,263.	E. Allworth, M.D., M.H.O.; W. Wigle, sanitary inspector.	About 4 times a year	Scarlatina, about 10 or 12 cases; diphtheria, 1 case; typhoid, 1 case.
Kemptville A.— H.— P.—1,129.	Dr. J. A. Jones, M.H.O.; B. Seeley, sanitary inspector.	House to house inspection in June.	Scarlatina, 28 cases; typhoid, 4.
Lakefield A.—500. H.—260. P.—1,200.	Alex. Bell, M.D.; Wm. Doidge, sanitary inspector.	All yards, etc., visited spring and fall, and a thorough cleaning up insisted on by 15th May; inspector is in yearly employment of corporation; well water tested, 38 samples in 1894.	Scarlatina, 6; diphtheria, 35; 5 deaths.
London West A.— H.— P.—1,864.	Dr. Traster, M. H. O.; R. W. Ward, sanitary inspector.	House to house inspection.	Assessors have entered 6 deaths on the roll but don't say cause of deaths.
Madoc A.— H.— P.—1,100.	E. D. Harrison, M. D., M.H.O.; Robt. Riordon, sanitary inspector.	As often as necessary	None
Mattawa A.— H.— P.—	None; none	Any inspection done is performed by local board of health.	None
Manitowaning A.— H.— P.—			During the summer there were two cases of scarlatina and some few cases of malarial fever.
Merrickville A.—705. H.—200. P.—928.	J. Holdcroft, M.D., M.H.O.	General inspection made once a year; all reports acted on quickly and firmly by inspector.	No cases during the year.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Quarantine and isolated building as hospital.	No	Use of chloride of lime, carbolic acid, etc.	One school; about 275 pupils.	....
No isolation hospital; but good care exercised to isolate those afflicted.	Yes; about 250 children in municipality attending school; about 400 vaccinated.	Rules laid down in pamphlet 15 issued by Provincial Board of Health are followed.	One; 5 rooms, about 50 in each.	....
No hospital; houses placarded and family isolated.	No; 400; have knowledge of only 2.	By thoroughly cleansing premises; burning sulphur in closed room and whitewashing.	Two schools; 1 high, 5 rooms; 1 public, 5 rooms; average attendance 32 and 50 respectively.	....
Some sent to Nicholl's hospital, Peterboro', others isolated at rooms in their own houses; notice placed on each house; no one but M. H. O., inspector or clergyman allowed in or out.	No; 409 children of school age; about 150 not vaccinated; none vaccinated in 1894.	Free use of carbolic acid, etc., in house and out of it; all clothes used destroyed by fire at once after recovery; house washed, sulphur fumigation, walls repapered or painted, clothing and bedding burned or soaked in bichlor., etc.	Two schools, 4 rooms, No. 1, 44 pupils. " 2, 46 " " 3, 42 " " 4, 41 "	....
None	Has not been compulsory, but mostly all school children have been vaccinated.	By using disinfectants, etc.	One school with six rooms; average attendance, 55 pupils.	100 cubic feet. .....
None	No................	Not carried out; no contagious diseases	Three schools; eight rooms; attendance in each, 47.	....
None	No vaccination; about 50 children of school age.	Ordinary process....	One school; one room; average attendance, 25.	225 cubic feet.......
....	....	....	....	....
By placards; no isolation hospital.	Not compulsory.....	None	Four rooms; No. 1, 123; No. 2, 75; No. 3, 57; No. 4, 59.	....

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and number of employees in each.	Water supply. Where wells are used give character of soil and subsoil.
Huntsville A.— H.— P.—1,468.	Have no forms	One tannery, about 30 hands employed; 3 planing mills, about 4 in each; 2 saw mills, about 30 hands in each.	Wells; hardpan and sandy loam.
Kingsville A.— H.— P.—1,263.	None	One woollen factory, 10 hands; 1 evaporating factory, 50 hands; 1 canning factory, 40 hands.	Wells; sandy loam; lately, water from Lake Erie.
Kemptville A.— H.— P.—1,129.	Only M. H. O. makes use of forms.	None	Wells; sandy
Lakefield A.—500. H.—260. P.—1,200.	Yes	One saw mill, 50 hands; 1 canoe factory, 10 hands; 2 wood factories, 8 to 10 hands; 2 flour mills; woollen factory closed in 1894.	From wells; clay, hardpan and limestone rock; river water not much used.
London West A.— H.— P.—1,864.	None supplied	One cider and vinegar factory employing 6 hands; 1 broom and brush factory with 20 hands.	Wells; water of good quality.
Madoc A.— H.— P.—1,100.	None	One tannery, 4 hands	Wells; clay and gravel
Mattawa A.— H.— P.—	No forms supplied	None	Rivers and wells, sandy soil.
Manitowaning A.— H.— P.—			
Merrickville A.—705. H.—200. P.—928.	Both are supplied	1 foundry, 20 hands; 1 hame factory, 20 hands; 1 stove foundry, 25 hands; 2 grist mills, 10 hands; 1 woollen factory, 25 hands; 1 furniture factory, 6 hands; 1 saw mill, 3 hands; 1 cheese factory, 6 hands.	Wells, clay soil

VILLAGES.—*Continued*

No. of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil, whether by contract or only by householder.	Sewage. How disposed of, whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
....	None in corporation.	Burned by householder.	....	....
None	None	By householder generally.	A number of dry earth closets; and efforts are being made to bring them into general use.	....
About 144 (2) no; (3) none.	Two in village in winter; none in summer; offal removed to country.	By householder; removed outside village limits.	Removed by householder.	One tannery.
Milk supply comes from adjoining township; 98 cows are kept by private parties in village; no inspection; none.	None allowed in the corporation.	Garbage is destroyed by fire; night soil is buried, done by householder or by a man who visits the village for that purpose.	Thrown on ground or into drains.	None.
Fifty dairy cows; kept by private parties; veterinary inspection.	None............	By householder.....	By natural shrinkage into the soil.	None.
None	Three; no licenses; offal buried.	Householder; by contract; buried.	Drains	None.
None	None............	By householder.....	By householder.....	None.
....	....	....	....	....
....	None............	Generally burned by householder; night soil buried.	By drains: no contract.	None.

VILLAGES.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Merriton . . . . A.—434. H.— P.—1,600.	J. F. Vanderburg, M.D., M. H. O.; Charles Alson, sanitary inspector.	House to house visitation.	Diphtheria, 12 cases, 1 death,
Midland . . . . A.— H.— P.—1,935.	R. Raikes, M. D.; B. R. Janes, sanitary inspector.	House to house inspection.	Typhoid, 1 case. . . . .
Millbrook . . . . A.— H.— P.—832.	Henry Turner, M. D.; James Handley, sanitary inspector.	From house to house every spring.	None. . . . .
Milton . . . . A.— H.— P.—1,278.	P. Stewart, M. D.; S. Bradley, sanitary inspector.	A general inspection and report by sanitary inspector.	Scarlatina, 5 cases, 4 deaths.
Milverton . . . . A.— H.— P.—603.	J. F. Cattermole, M. D., M.H.O.	Cellars, yards and closets inspected and ordered to be cleaned if necessary; wells and water examined.	Scarlatina, 2 cases . . . . . .
Newcastle . . . . A.—1,280. H.—212. P.—600.	A. Farncomb, M.D., M. H. O.	Inspection by the members of the board of health.	Scarlatina, 3 cases; typhoid, 3.
Newbury . . . . A.— H.— P.—450.	P. B. Robertson, M.D., M.H.O.	It is customary to notify the inspector of any existing nuisances, who informs the M.H.O.	None . . . .
Oakville . . . . A.— H.— P.—1,827.	W. S. Black, M.D.	House to house inspection.	Diphtheria, 2 cases, 1 death; typhoid, 2 cases, no deaths.
Oil Springs . . . . A.— H.—200. P.—1,050.	A. P. Chalmers, M. D., M.H.O.	Inspection of drainage, sewage and closets.	Scarlatina, 12 cases. . . . . .
Omemee . . . . A.— H.— P.—573.	J. N. Thompson, M. D., M. H. O.; T. A. Mitchell, sanitary inspector.	Sanitary inspector inspects premises, etc., once a year.	None . . . .

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Houses placarded; no isolation hospital.	No. 239 in public school, 89 in separate school; no vaccinations in 1894.	Fumigation by sulphur, carbolic acid, etc.	Three schools; 7 rooms.	About 480 feet......
Careful isolation; no isolation hospital.	Yes, 500; over 400 vaccinated in 1894.	None required for 2 years.	Two schools; 9 rooms; average, 40.	400 cubic feet.......
None..	No; 3 vaccinated...	....	One; 4 rooms; about 50 in each.	210 feet.............
No hospital	Not compulsory	Fumigating the dwellings when disease occurred.	One school; 7 rooms, including model school; average, 50.	Ample space........
After patient recovers house thoroughly cleaned and disinfected.	No. 129; none.....	Patients isolated; all linen or bedding burnt or boiled, woodwork scrubbed, and rooms filled with sulphur fumes.	One school; 2 rooms.	175 cubic feet.......
No cases, and no isolation hospital.	A few vaccinated ...	No disinfection except by sulphur fumes.	One union and high school; 4 rooms; one class room; attendance, 50, 30, 30, 40.	....
Placard the house and keep patient isolated; no hospital.	No; 90; none vaccinated.	Have had no cases demanding it. ...	One; 2 rooms; average from 40 to 50.	240 feet ....
Houses are placarded.	No.....	By free use of disinfectants.	Two schools; public school, 6 rooms, 283 attendance; high school, 2 rooms, attendance, 29, 29.	Public schools, 238 cubic feet; high school, 331 cubic feet.
None	No................	By scrubbing with bichloride solution and burning of sulphur.	Three schools; 4 rooms.	250 cubic feet.......
None	No; the local board have obtained vaccine and will attend to it at once.	None..............	One high, 1 public school, 5 and 2 rooms respectively; average attendance, high school, 32; public school, 39.	From 250 to 300 feet.

VILLAGES—*Continued.*

Municipality.	Forms for notification by teachers and M.H.O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Merriton A.—434. H.— P.—1,600.	Yes; yes	Two paper mills, 65 hands; 1 cotton mill, 175 hands; 1 foundry, 15 hands; 1 wheel factory, 30 hands.	Waterworks
Midland A.— H.— P.—1,935.	Forms supplied to M.H.O.	One woollen factory, 5 hands; 1 planing factory, 5 hands; 1 axe foundry, 15 hands; 1 lumber mill, 50 hands.	Wells
Millbrook A.— H.— P.—832.	Not required this year	None	Wells
Milton A.— H.— P.—1,278.	Medical practitioners have the forms; teachers report verbally to M.H.O.	Two; 1 tannery, 12 hands; 1 shoe factory with 50 hands.	Town waterworks; some wells; clay rock and quicksand.
Milverton A.— H.— P.—603.	None; no; none	Flax mill, 12 hands; furniture factory, 8 hands; saw mill, 3 hands; cheese factory, 3 hands	All wells; soil clay loam; sub-soil clay.
Newcastle A.—1,280. H.—212. P.—600.	Yes	Two evaporators, 6 hands in each.	Wells are used; clay and gravel.
Newbury A.— H.— P.—450.	No	None	Sand and gravel soil
Oakville A.— H.— P.—1,827.	Yes, when necessary	Four; tannery, 70 hands; purse factory, 20 hands; basket factory, 30 hands; electric company, 20 hands.	Sandy soil
Oil Springs A.— H.—200. P.—1,050.	Yes	None	Many use rain water filtered.
Omemee A.— H.— P.—573.	No notification for teachers; M.H.O. has forms.	One planing factory, 5 hands; 1 tannery, 12 hands.	Wells, gravel with clay sub-soil.

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
None	None	By scavengers generally.	Dry earth	None.
Cannot say ; no	None	Carried outside town by householders.	None	None.
123 ; no	Two ; offal fed to hogs.	By householder.	Can't say	None.
None	None	By private contract and by householder.	...	...
Seventeen ; no medical or veterinary inspection.	One ; none ; no drainage ; can't say.	Buried ; householder.	Privy vaults cleaned every May.	None.
Number of dairy cows, 98 ; no examination.	One drained in Lake Ontario.	By householders	No dry earth closets.	None.
None ; no inspection.	One	By householder	Dry earth closets ; no contract.	None.
No dairy cows	One ; offal buried	Each householder attends to his own.	Dry earth closets; no.	None.
Fifty ; no ; none	None allowed within corporation.	By contract	Carted to the country and put on land.	None.
...	None	By householder	None	None.

VILLAGES.—*Continued.*

Municipality.	Names of M H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Paisley.. A.— H.—400. P.—1,300.	J. McMahan, sanitary inspector.	Inspection of premises.	Scarlatina, 21 cases; diphtheria, 1 case; typhoid, 1 case.
Port Dalhousie A.— H.— P.—849.	J. W. Considine, M.D., M.H.O.	None in particular.	Typhoid, 3 cases
Port Dover A.— H.— P.—1,007.	J. R. Hamilton, M. D., M.H.O.	When complaint is made	None
Port Elgin A.—600. H.—450. P.—1,700.	H. Becker, M.D., M.H.O.; John Christian, sanitary inspector.	General inspection by sanitary inspector at intervals during the year.	Scarlatina, several cases; diphtheria, 5 cases; typhoid, a number of cases not reported.
Point Edward A.—734. H.—380. P.—1,400.	A. N. Hayes, M.D., M. H. O.; A. Mackinnon, sanitary inspector.	Inspection of privies, wells and yards.	Typhoid, 1
Port Stanley A.—550. H.—165. P.—619.	L. I. Mothersell, M. D., M.H.O.; S. Eveland, sanitary inspector.	House to house inspection.	None
Port Perry A.— H.— P.—1,613.	G. H. Clemans, M. D.; R. McKnight, sanitary inspector.	House to house inspection.	Typhoid, 1
Portsmouth A.— H.— P.—800.	R. J. Darrogh, M. D., M.H.O.	House to house inspection by sanitary inspector.	Four cases typhoid, 1 fatal.
Preston A.— H.— P.—1,799.	W. B. Duck, M. D	....	The health of the village has been good, and tolerably free from any contagious diseases.
Renfrew A.— H.— P.—2,293.	T. D. Galligan, M. D., M. H. O.; B. J. McDermit, sanitary inspector.	....	Forty cases of diphtheria, 6 deaths; 8 cases of typhoid, 2 deaths.
Richmond Hill A.—500. H.— P.—820.	W. J. Wilson, M.D., M. H.O.; Jas. Brownlee, sanitary inspector.	House to house inspection.	Four cases scarlatina; 3 cases typhoid.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Patient to be isolated; no hospital.	No	By sulphur fumes	One school; 5 rooms; average, 50 pupils in each.	......
Not necessary	Yes, 250	None	One: three rooms	Good ventilation.
None required	No; none vaccinated	None required	One school; 6 rooms.	......
House placarded and attendants not allowed to mix with public; no hospital.	Not compulsory	Clothing and house disinfected by repeated washing and boiling; woodwork washed with solution of bichloride, etc.	Two; high and public.	......
None	No; school children 349; vaccinated, 200.	Usual means	One school; 4 rooms; average attendance, 42.	211 feet
None	No; 185; none vaccinated.	......	One school; 2 rooms; attendance, 45 and 52 respectively.	Average cubic air space, 242 feet.
No isolation hospital	No	Each physician carries out his own ideas.	Two; one, eight rooms, attendance in each, 26; one two rooms, attendance, 47.	......
None in village; disinfection of houses; hospital at Kingston available.	Yes; number not known.	No special means	Three; 32, 42, 32=106.	311
......	......	......	......	......
None; no hospital	No	The furniture, bedding, etc., is fumigated with sulphur fumes and saltpetre.	Four schools	......
Patients isolated in their homes.	No; 140; 3 or 4 vaccinated.	Boil clothing, wash room with bichloride of mercury solution, etc.	One high; 1 public; attendance 70 and 135 respectively.	......

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Paisley. A.— H.—400. P—1,300.	.. ..	Two woollen factories, about 20 employees.	Good water; some parts clay, and some parts sand.
Port Dalhousie. A.— H.— P.—849.	Not required	One rubber factory, about 200 hands.	Wells, sandy soil
Port Dover A.— H.— P.—1,007.	None supplied	One woollen mill, 80 to 100 employed; 1 cooper shop, 6 to 12 employed; 4 blacksmiths' shops, 2 to 3 hands each.	Lake water
Port Elgin A.—600. H.—450. P.—1,700.	Forms supplied, used occasionally.	Woollen mill, rake factory, brush factory, flour mill, tannery.	Wells; soil sandy, porous sub-soil, clay and sand.
Point Edward A.—734. H.—380. P.—1,400	Yes; yes	None	Wells; sand; sub soil same.
Port Stanley A.—550. H.—165. P.—619.	No forms supplied	One saw mill and handle factory, 15 hands.	Wells; sandy loam
Port Perry A.— H.— P.—1,613	Yes; yes	....	Wells; soil, clay loam; sub soil, clay and gravel.
Portsmouth A.— H.— P.—800.	No forms	....	Wells and lake
Preston A.— H.— P.—1,799.	....	....	....
Renfrew A.— H.— P.—2,293.	No; no	....	Wells; clay
Richmond Hill A.—500 H.— P.—820.	No	One carriage factory, 13 hands.	Wells

VILLAGES — *Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
None	None.	Removed to an isolated place.	Some by dry earth closets, others by removal.	
About 12; no veterinary inspection.	One; not much in use.	Householders	Burned	None.
About 50; no veterinary or medical inspection.	None in village.	Householder; dry earth closets; buried generally.	Dry earth closets; no contract; removal by municipality.	None.
No examination for tuberculosis.	Two slaughterhouses not licensed, not drained; offal removed to farms in vicinity.	Removed by contractor to farm.	Dry earth closets; contract removal.	None.
Thirty-one; no veterinary inspection.		By both		
None.	One; drained into Kettle creek; offal fed to hogs.	Householder	Pits.	
None.	None.	By householder	No sewerage system; generally dry earth closets.	None.
Forty; no	None.	By householder generally in spring, and oftener if complaint is made.	Chiefly pits; no contract.	None.
265.	One; not drained; everything is buried.	Householder	Some dry earth closets.	None.
Several private families keep cows. No tuberculosis in district.	Two; offal fed to pigs.	Householder	A good many dry earth closets; no contract removal.	None.

VILLAGES.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Stouffville A.— H.— P.—1,107.	S. Mighton, sanitary inspector.	Personal inspection	Scarlatina, 16 cases
Sterling A.—120. H.—130. P.—820.	J. S. Sprague, M. D., M. H. O.	Annual inspection by board is generally made.	None
Streetsville A.—600. H.—150. P.—660.	No M. H. O; J. H. Davidson, sanitary inspector.	House to house inspection twice a year.	None
Springfield A.— H.— P.—414.	A. F. Tufford, M. D.; H. W. Nigh, sanitary inspector.	Sanitary inspector inspects all premises and reports any in bad condition.	2 cases of typhoid
Sutton A.— H.— P.—644.	T. B. Bentley, M. D., M.H.O.; H. A. Kamp, sanitary inspector.	Inspector makes a general inspection in the spring.	1 case scarlatina; 1 case typhoid.
Tara A.— H.— P.—760.	No M. H. O.; L. G. Briggs, sanitary inspector.	Every spring the inspector goes his rounds and inspects all premises.	Scarlatina, a few cases
Teeswater A.— H.— P.—1,135.	John Gillies, M.D., M. H. O.; John F. Nivins, sanitary inspector	Premises are inspected several times every year.	1 case diphtheria; 12 cases typhoid.
Thedford A.— H.— P.—557.	W. A. Minnes, M. D., M.H O.; J. Robinson, sanitary inspector.	Personal inspection of village every three months by sanitary inspector.	Typhoid, 1 case.
Thornbury A.— H.— P.—800.	G. H. Hurlburt, M.D., M.H.O.; F. D. Kent.	Constable makes general inspection.	None
Tilbury Centre A.— H.— P.—858.	M. Sharp, M. D.; G. Keith, sanitary inspector.	House to house inspection by sanitary inspector.	Scarlatina, 1; typhoid, 1; 1 death.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality, and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools, number of rooms, and attendance in each.	Average cubic air space to each pupil.
By confining patients to their houses.	No ; 260 ; none	Carbolic acid, bichloride of mercury, etc.	1 ; 5 ; 42	More than required space.
No isolation ; no hospital.	No ; 259 ; 1 vaccinated.	Not any employed ..	Two ; high and public ; high school attendance in 4 rooms, 46 ; public school, 4 rooms, attendance in each, 54, 62, 60, 83.	Average cubic air space in high school, 540 ; public school, 176.
No isolation hospital.	Number of school children, 174 ; number vaccinated not reported.	....	One public school, 3 rooms, attendance, 159 ; 1 high school, 2 rooms, attendance, 47.	Public school, 230 ; high school, 610.
No isolation hospital.	No	Disinfection with carbolic acid ; fumigation with sulphur.	One public school, 2 rooms, attendance in each, 70.	70 feet..............
Isolation in homes ; no hospital.	No ; about 200 ; none vaccinated.	By means of usual disinfectants under supervision of medical practitioner.	One ; 3 rooms ; average, 60.	200 cubic feet ......
No isolation	Not compulsory ; number of children, 233 ; cannot say how many were vaccinated.	Village is very healthy; contagious diseases are very rare.	One school, 3 rooms, attendance from 35 to 50 in each room.	Ample ....
Houses placarded ; no hospital.	Not compulsory	....	....	....
None	No ; about 80 ; about two-thirds vaccinated.	None	Two rooms ; 35 to 45.	735 feet ....
Houses placarded ; no hospital.	No ; number of children about 200 ; number vaccinated, 5 or 6.	Ventilation ; fumigation with sulphur fumes.	One school, 5 rooms, average, 40 pupils in each.	....
No isolation hospital.	Yes ; 156 ; 85.......	House fumigated by burned sulphur.	Two ; 3 in public, 2 in separate ; attendance 120, 85 respectively.	140 in public school.

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used give character of soil and sub-soil.
Stouffville A.— H.— P.—1,107.	Yes	Two planing factories, 1 vinegar, 1 foundry, about 5 hands in each.	Wells; heavy clay
Sterling A.—120. H.—130. P.—820.	No forms supplied to teachers or M. H. O.	One cider factory, 1 cheese factory adjacent to village.	Wells are in general use.
Streetsville A.—600. H.—150. P.—660.	Supplied to medical practitioners.	None within the municipality.	Wells; soil, clay loam; sub-soil, white clay.
Springfield A.— H.— P.—414.	None	None	Soil, clay loam; sub-soil, clay.
Sutton A.— H.— P.—644.	Supplied on request.	Two planing mills, 6 hands; 1 cheese factory, 2 hands.	Wells
Tara A.— H.— P.—760.	No	One foundry, 2 employing 10 or 12 hands; 1 woollen factory, employing from 3 to 6 hands.	Wells; soil, heavy clay.
Teeswater A.— H.— P.—1,135.	Yes; yes	Two saw mills, 21 hands; 1 foundry, 21 hands; planing mill, 14 hands; furniture, 16 hands; tannery, 4 hands.	Wells used; gravel and loam sub-soil; rock bottom.
Thedford A.— H.— P.—557.	None	One flax mill with 20 employees.	Wells; dark clay loam with blue clay sub-soil.
Thornbury A.— H.— P.—800.	No; no	One flour mill, 5 hands; 1 oat mill, 2 hands; 1 woollen mill, 10 hands; 1 saw mill, 6 hands; 1 tannery, 3 hands.	Wells; soil, gravel; sub-soil, blue clay.
Tilbury Centre A.— H.— P.—858.	No; no	One handle factory, 37 employees; 1 Bee Hive and Bee Supply Mf'g Co., 9 employees.	Wells; clay loam; blue clay sub-soil.

VILLAGES —*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See, sec. 63 Public Health Act.) How licensed and regulated?
None	Two; none; fed to pigs; no drainage.	By householder	No sewers....	None.
147; no medical or general inspection.	Two; not licensed; well drained and attended to.	Generally neglected or not properly attended to; by householder.	No sewage regulations in use.	None.
10; no medical or veterinary inspection.	Two; licensed; drained into running streams; offal fed to hogs.	By householder	Some dry earth closets: no contract removal; pits generally used; sewage buried.	None, except slaughtering of animals; slaughterhouses inspected at stated periods.
None	One; licensed	Householder........	Dry earth closets ...	None.
40; no inspection ..	Two; none licensed; well isolated.	By householder	Dry earth closets; no contract removal.	None.
About 40 to 50; no inspections.	One; under inspection; offal buried.	Removed by householder.	....	None.
23; no; no examination.	None	By householder.....	Privy pits..........	None.
About 30; no examination of herds.	One; one; buried ..	Carted out of corporation by householders.	By dry earth closets.	None
About 100; no examination this year.	Two; offal fed to pigs.	By householder; buried.	Drained into lake...	None.
None; no; none	None in corporation.	By householders....	....	....

VILLAGES.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Tottenham A.— H.— P.—540.	Jas. Campbell, M. D., M. H. O.; Jos. Preston, sanitary inspector.	General inspection half yearly by sanitary inspector.	Diphtheria, 8 cases, 3 deaths; typhoid, 1 case.
Tweed A.— H.— P.—801.	W. M. Mather, M. D., M. H. O.; Thos. Beatty, sanitary inspector.	House to house inspection four times in the year.	Typhoid, 1 case
Vankleek Hill A.— H.— P.—	John D. Campbell, sanitary inspector.	....	Some cases of scarlet fever; some trouble with surface water; the mill pond is in better condition than usual.
Vienna. A.—1,600. H.—97. P.—354.	J. H. Hoover, M. D.; Daniel Purdy, sanitary inspector.	By complaint of any ratepayer to sanitary inspector.	Scarlatina, 5 cases; diphtheria, 1 case; typhoid, 4 cases.
Waterford A.—420. H.— P.—1,138.	F. S. Snider, M.D., M. H. O.; W. B. Goodwin, sanitary inspector.	Every house inspected by sanitary inspector.	Scarlatina, 7 cases
Watford A.—400. H.—330. P.—1,231.	J. A. McLeay, M.D.; A. Mathews, sanitary inspector.	House to house inspection after notices were issued requiring all premises to be in sanitary condition.	Scarlatina, 10 cases; diphtheria, 2 cases; typhoid 20 and 1 death.
Walkerville A.— H.— P.—904.	C. N. Hoare, M.D.; A. B. Griffith, sanitary inspector.	House to house inspection over town.	Diphtheria, 5; typhoid, 3.
Weston A.— H.— P.—1,211.	Dr. Charlton, M. H. O.; J. Barker, sanitary inspector.	Inspection according to law and whenever requested by local board.	Scarlatina, 4 cases; diphtheria, 2 cases.
Winchester A.— H.— P.—986.	R. Reddick, M.D., M. H. O.; J. H. Erritt, sanitary inspector.	Two general inspections; frequent special inspections.	Scarlatina, 12 cases; typhoid, 2 cases.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
Each case is isolated at home as much as possible; no isolation hospital.	Yes; 125; number vaccinated, 20; a large percentage of children were vaccinated previously.	Fumigation; boiling, washing walls with chloride solution, 1-1,000.	One school, 3 rooms, 40, 40, 45.	About 600 cubic feet.
Patients isolated as well as possible; no hospital.	....	Fumigation	Two, 5 rooms	Public school, 170 cubic feet; separate school, 459 cubic feet.
....	....	....	....	....
Houses placarded...	No	Fumigation	High and public school; public school, 2 rooms, average attendance 28, 35; high school, 2 rooms, average attendance, 25.	High school, 1,115 cubic feet; public school, 119 cubic feet.
None	No; 202 school children; don't know how many have been vaccinated.	None	One school, 4 rooms; 1 high school.	Don't know.........
To prevent another outbreak of diphtheria one patient was taken to general hospital and another patient was quarantined.	Free vaccination not compulsory; about 100 vaccinated.	Burning of sulphur, etc.	One public school, attendance, 255; 1 high school, 120 pupils.	300 cubic feet. .....
Isolated on premises, except smallpox; have no isolation hospital but combine with Windsor.	Compulsory as far as schools are concerned; 200; 175 vaccinated in 1894.	Disinfected by sanitary inspector; fumigated for eight or ten hours.	One, 5 rooms, average, 30.	About 400 cubic feet.
None	Not compulsory	None	Three schools, 7 rooms, average attendance, 35.	300 cubic feet......
No person is allowed to have access to patient except the necessary attendants; no hospital.	No; 177 under 16 years; from 16 to 21 years, 56; don't know.	Physicians are careful to have every case disinfected.	One school, 6 rooms, attendance, 39, 34, 42, 44, 43, 38, respectively.	230 cubic feet. .....

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub soil.
Tottenham A.— H.— P.—540.	Neither supplied	One sash and door factory, 3 to 4 hands.	Wells are used; clay soil.
Tweed A.— H.— P.—801.	Not supplied	None	Clay loam
Vankleek Hill A.— H.— P.—			
Vienna A.—1,600. H.—97. P.—354.	No	One cheese factory, 2 employees; 1 woollen factory, 13 employees; 1 sash and door factory, 7 employees.	From wells and springs.
Waterford A.—420. H.— P.—1,138.	None	One canning factory, 1 evaporating factory.	Wells; soil, gravelly
Watford A.—400. H.—330. P.—1,231.	Not supplied	Two; 1 sash and door factory, 10 hands; 1 saw mill, 4 hands.	Principally wells; water fair; heavy clay.
Walkerville A.— H.— P.—904.	No	Eleven factories and mf'g. concerns; distillery, brewery, foundry, vinegar works, planing mill, basket factory, wire fence works, cooper shop and Globe furniture works, 50, 10, 20, 25, 10, 40, 15, 5, 12, 60 employees respectively.	Detroit river water through waterworks.
Weston A.— H.— P.—1,211.	No need	One woollen factory, employees, 150.	Clay soil; rock bottom
Winchester A.— H.— P.—986.	Have forms, M. H. O. and physicians use them, teachers do not.	One woollen factory, 5 employees; sash, door, furniture and saw mill, 35 employees.	Wells only; clay soil

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number, and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
About 50; no veterinary inspection	None	By householder ...	Dry earth closets; no contract removal.	None.
About 20 in the municipality.	One; no license; offal carted away and destroyed.	Carted outside of corporation and buried.	Contract removal ..	....
....	....	....	....	....
Eighty-twc; none...	Two; used occasionally; not licensed; offal buried.	By householder	No system of sewerage.	None.
Don't know	None	Both by contract and householder.	No sewerage system.	None.
None within corporation; no inspection.	Two; outside corporation.	Householders employ men to remove the garbage, etc., to farms.	No extensive sewers, ordinary drains carry off surface water; no pits for closets.	None.
None; milk supplied from outside town.	None	Garbage collected twice a month and dumped on vacant lot and partially consumed by fire.	Sewers empty in Detroit river; good closets.	None.
Very few; no inspection.	Four; all licensed; carried off in barrels.	By householder	Generally dry earth closets.	None.
Don't know; don't know; none.	None in municipality.	By householder	Have no sewers; no stream to drain into.	None.

VILLAGES.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Woodbridge A.— H.— P.—768.	Sanitary inspector, Geo. Blake.	General inspection of all premises twice a year.	None
Woodville A.—500. H.—125. P.—600.	John Grant, M.D., M. H. O. ; A. I. Smith, sanitary inspector.		Scarlatina, 2 cases ; diphtheria, 1 case.
Wyoming A.— H.— P.—797.	A. Harvey, sanitary inspector.	Inspector reports anything requiring attention.	Diphtheria, 30 cases ; typhoid, 6 cases.

VILLAGES.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	....	....	One school, 3 rooms, about 50 in each.	....
Houses placarded; patients not allowed to mingle with the public.	No	....	One, 2 rooms, attendance about 100.	....
Have no isolation hospital; houses placarded and inmates not allowed to mingle with the public.	Yes; all children not vaccinated are excluded from school.	None, except carbolic acid and chloride of lime, used where patients are.	One, 4 rooms, attendance about 200.	About 250 cubic feet

VILLAGES.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number, of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Woodbridge A.— H.— P.—768.			Wells ; clay ; gravel sub-soil.
Woodville A.—500. H.—125. P.—600.	None	None	Wells ; clay soil
Wyoming A.— H.— P.—797.	Yes ; yes.	One woollen factory, employing 6 hands.	Wells and waterworks ; clay ; surface sub-soil, blue clay.

VILLAGES.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil, Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	Two; kept in a sanitary condition; offal carried outside of corporation.	By householder	....	None.
None	None	....	....	....
About 20; no inspection.	One; not licensed ..	Night soil removed by contract.	Sewers carry it to low land.	None.

TOWNSHIPS.

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Adelaide A.— H.— P.—2,616.	F. I. Bateman, M.D., M. H. O.; C. Cleford, sanitary inspector.		Diphtheria, 1 case; typhoid, 1 case.
Admaston A.— H.— P.—2,548.	T. D. Gallegan, M.D., M. H. O.		Scarlatina, 100 cases; diphtheria, 15; typhoid, 3.
Albemarle A.— H.— P.—1,819.			Township is free from all contagious diseases; about the usual number of deaths from natural causes.
Arran A.— H.— P.—2,913.	A. Neelands, sanitary inspector.	Inspector visits all school premises, and, with the exception of the water closets, found everything in a sanitary condition.	No contagious diseases in township this year.
Asphodel A.— H.— P.—1,655.			During the year 1894 no contagious diseases were reported.
Alice and Fraser A.— H.— P.—1,920.	W. Grey, M.D., M.H.O.	No general inspection...	Scarlatina, 1; diphtheria, 21; 6 deaths.
Alfred A.—43,610. H.—610. P.—3,071.	I. Groulx, sanitary inspector.	Inspection on request only.	Scarlatina, 1 case
Alnwick A.—17,178. H.—253. P.—1,253.	T. C. Lapp, M.D., M. H. O.; Jas. Roberts, sanitary inspector.	House to house inspection in 1893.	Scarlatina, 2; diphtheria, 2; typhoid, 2.
Amaranth A.— H.— P.—2,799.	F. W. Lewis, M. H. O.	None	
Ameliasburg A.— H.— P.—3,078.	A. F. File, M. H. O.; T. H. Thornton, sanitary inspector.		Scarlatina, 28 cases; diphtheria, 8 cases.
Amherst Island A.—23,040. H.- P.—1,100.	H. S. Northmore, M. H. O.		
Ancaster A.—45,942. H.— P.—3,884.	H. Richardson, M.H.O.; R. O'Hara, sanitary inspector.	General inspection by M. H. O. and sanitary inspector.	Scarlatina, 25 cases; diphtheria, 3 cases.

TOWNSHIPS.

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	No................	Fumigation	Eleven ; 12........	....
No hospital, isolation at homes.	No.	Floors and walls are washed in bichloride of mercury, etc.	Twelve	....
....	....	....	....	....
....	M. H. O. attends different places for the purpose of vaccination ; about 300 were vaccinated.	....	....	....
....	....	....	....	....
When informed houses are placarded.	No ; 440 ; none in 1894.	Patients isolated and premises disinfected.	Seven schools, 1 room in each.	....
Nearly all dwellings are isolated, no hospital.	No ; 891 ; none vaccinated.	Generally done by attending physician.	Eighteen ; generally 1 room in each ; attendance from 15 to 60.	....
Houses placarded, no hospital.	No ; 270 ; 200 vaccinated in 1894.	Rooms moistened with steam, and sulphur fumes used.	Three schools ; 4 rooms ; 30 in each.	About 100 cubic feet
No hospital..	No ; 807 ; none.....	No system needed ..	Eleven ; 1 room in each, average attendance from 20 to 40.	300 to 400 cubic feet.
By quarantining houses, no hospital.	No................	By fumigation chiefly.	Seventeen; 18 rooms.	Sufficient..........
Not required	No ; cannot say how many.	No infectious diseases.	Five schools; 1 room.	....
By placarding the house ; none.	No................	Under direction of M. H. O.	Thirteen ; 17 ; 40 in each.	....

TOWNSHIPS.

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Adelaide A.— H.— P.—2,616.	Physicians only, who notify the board.	Two cheese factories	Generally wells and springs.
Admaston A.— H.— P.—2,548.			
Albemarle A.— H.— P.—1,819.			
Arran A.— H.— P.—2,913.			
Asphodel A.— H.— P.—1,655.			
Alice and Fraser A.— H.— P.—1,920.	Physicians only	One cheese factory; 1 employee.	Wells and springs
Alfred A.—43,610. H.—610. P.—3,071.	Not supplied to teachers.	Only a few cheese factories.	Wells; clay and sand
Alnwick A.—17,178. H.—253. P.—1,253.	M. H. O. only	None	Wells; soil, clay and clay loam.
Amaranth A.— H.— P.—2,799.	None	None	Wells; soil, clay loam; sub-soil, chiefly limestone and clay.
Ameliasburg A.— H.— P.—3,078.	Not used	None	Wells
Amherst Island A.—23,040. H.— P.—1,100.	None	One cheese factory	Lake Ontario
Ancaster A.—45,942. H.— P.—3,884.	Yes	Two cheese factories	Wells and springs

TOWNSHIPS.

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses; Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal.	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
About 1,500; no; none.	None...	By householder	....	....
About 3,000; no inspection of any kind.	Two; no license....	By householder.....	Spread by householder over their lots.	....
450; no	None........	By householder	Each householder disposes of his own.	None.
No milk sold in this township, all is manufactured into butter and cheese.	None........	No system........	Closets	None.
1,525; no; none....	Four; not licensed..	By householder	....	None.
About 300; no......	None........	....	....	....
200; none; none...	Six; no license; drawn away and ploughed under ground.	By householder	By applying it to the land; no.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Anderdon A.— H.— P.—2,205.	Dr. Feeter, M. H. O.; D. Mongean, sanitary inspector.	The sanitary inspector and M. H. O. examines any cases and report to local board of health.	Scarlatina, 1; diphtheria, 2; typhoid, 3; 1 death.
Armour A.— H.— P.—	Dr. Crawford, M. H. O.; Jas. Greenway, sanitary inspector.	Inspector, on complaint, attends to all cases.	Scarlatina, 5 cases .....
Arthur A.— H.— P.—3,224.	Dr. McPhaden, M.H.O.	Not much done.........	Scarlatina, 7 families, 4 deaths; diphtheria, 4 cases, 3 deaths,
Athol A.— H.— P.—1,234.	None	....	Diphtheria, 1 case ......
Bathurst A.— H.— P.—2,512.	R. D. Hogan, sanitary inspector.	Inspection made by sanitary inspector and local board of health.	....
Bangor A.— H.— P.—	....	....	....
Barton A.—12,376. H.— P.—3,270.	H. Bryant, sanitary inspector.	Visiting dairies, slaughterhouses, and attending to complaints.	None ....
Bayham A.— H.— P.—3,486.	J. D. Smith, M.D......	....	Township has been free from all contagious diseases for the year 1894, with the exception of one case of typhoid and one of diphtheria.
Beverley A.— H.— P.—4,520.	J. J. Manes, M.D.....	Sanitary condition of the township is satisfactory.	Five or six families had scarlet fever; only one death occurred; 3 cases of diphtheria; 3 or 4 cases of typhoid.
Belmount and M A.— H.— P.—	W. H. Jeffs, M.D., M. H. O.	No inspection...........	....
Bentinck A.—75,247. H.— P.—4,326.	No M.H.O.; John Small, sanitary inspector.	Inspection has been general.	Scarlatina, 4; diphtheria; 2.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
Houses placarded, etc., no hospital.	No................	Houses disinfected by sulphur fumes and carbolic acid.	Nine schools; 1 room in each.	About 900 cubic feet.
Houses with patients are isolated, no hospital.	No ; 240 ; 200......	Fumigation of apartments.	Four ; 5...........	....
Houses placarded. no isolation hospital.	No ; 900 ; don't know how many vaccinated.	Ordinary means used.	Fourteen schools in township.	....
Premises are quarantined, no isolation hospital.	No................	....	Seven ; one room in each.	....
None	No................	No cases of contagious diseases.	Eighteen schools ; 19 rooms; attendance, 35 in each.	....
....	No................	No disinfection.....	Five schools; 5 rooms.	....
....	No ; cannot say to what extent vaccination has been effected.	None...............	Seven schools ; 1 room in each.	....
....	....	....	....	....
....	No ; the board made strenuous efforts to enforce vaccination, but met with much opposition.	....	....	....
....	No................	....	Fourteen	....
Contagious diseases are isolated by sanitary inspectors by placarding houses.	No ; 1,815, as given by assessor ; no return as to the number vaccinated during the year.	Attending physicians give instructions as to disinfection, the mode and materials used.	Eleven schools ; 15 rooms.	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Anderdon A.— H.— P.—2,205.	Not supplied		Loam and clay soil
Armour A.— H.— P.—	None		Wells
Arthur A.— H.— P.—3,224.	M. H. O. supplied	Two cheese factories	Wells are used; heavy clay.
Athol A.— H.— P.—1,234.			
Bathurst A.— H.— P.—2,512.	No	One woollen factory; 7 cheese factories; 1 carding mill; 4 saw mills; employing the following number of hands respectively, 50, 2, 5, 10.	Lakes, rivers and wells; clay loam with clay sub-soil.
Bangor A.— H.— P.—	None	One cheese factory, employing 2 hands.	Sandy loam, hard pan
Barton A.—12,376. H.— P.—3,270.	Not supplied	None	Soil and sub-soil varies
Bayham A.— H.— P.—3,486.			
Beverley A.— H.— P.—4,520.			
Belmount and M. A.— H.— P.—	No	Four factories	
Bentinck A.—75,247. H.— P.—4,326.	Yes	One furniture factory; 1 bed spring factory; 1 sash and door factory; 1 foundry; 1 felt boot factory; employing about 200 hands.	Wells; sandy and gravelly loam.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Number not known; no inspection.	None.	....	....	....
Every farmer has cows; no inspection.	None.	By householder	No system	None.
Don't know; no examination.	None.	....	....	....
....	....	....	....	....
2,800 dairy cows; no inspection.	None.	By householder	....	None.
....	One; not licensed; offal fed to hogs.	Householder	No system	None.
251 cows; M. H. O. or veterinary employed.	Not licensed; offal fed to hogs; parties are allowed to slaughter by permission of council; 12 have permits.	Householder	Privies	None.
....	....	....	....	....
....	....	....	....	....
....	....	By householder	By householder	None
....	Two	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Bertie A.— H.— P.—3,794.	Dr. N. Brewster, M. H. O.; N. Ellsworth and B. Johnston, sanitary inspectors.	Annual inspection by sanitary inspector.	Scarlatina, several cases of mild form; diphtheria, several cases; typhoid, 3 cases, 1 death.
Binbrook A.— H.— P.—1,511.	J. W. Smuck, M.H.O.	Inspection only when a complaint is made.	....
Blanford A.— H.— P.—1,710.	Dr. Wellford and Dr. Bright, M. H. Officers.	....	....
Blenheim A.—69,120. H.—3,000. P.—5,000.	None	Township is divided into districts, and a committee is appointed for each.	Typhoid, 1 case
Brock A.— H.— P.—3,578.	Drs. McDunnett and Jardine, M. H. Officers.	Inspection	....
Brooke A.— H.— P.—3,196.	Dr. Mackenzie, Alvinston.	Inspection by board	None
Brougham A.— H.— P.—479.	Dr. Galligan; D.C.Hunt, sanitary inspector.	None	....
Burford A.— H.— P.—4,478.	R. Harbottle, M.D.; D. R. Hamilton, sanitary inspector.	Inspection is made when complaint comes to inspector.	Scarlatina, 8 cases, 2 deaths; diphtheria, 3 cases.
Brunel A.— H.— P.—618.	J. W. Hart, M.D.	Places where contagions break out are inspected; other places have not been.	One case of diphtheria
Burleigh and Anstruther A.— H.— P.—1,330.	H. B. Anderson, M.D.	....	Diphtheria, 10 cases, 5 deaths.
Burpee A.— H.— P.—126.	J. Johnston, M.D.; Isaac Campbell.	....	None reported

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Placards used, schools closed when necessary, and the usual means adopted to prevent spread.	Three vaccinators appointed; about 600 vaccinated out of 850.	In cases of typhoid the bedding is burned; stools ordered disinfected and burned.	Thirteen; 19......	......
Isolation in the house and house placarded.	No.	House disinfected by washing walls, etc., with bichloride of mercury solution, and clothes washed in the solution, M. H. O. don't think sulphur fumes sufficient.	Six schools; 7 rooms.	......
......	As far as we could carry it out.	......	Six; 7......	......
......	As far as possible ..	None	Nineteen; 22; average about 40 each.	Don't know ......
Houses placarded ..	No......	Chloride of lime and carbolic acid.	......	......
......	No	......	Eighteen schools....	......
......	No vaccination.	......	......	......
No isolation hospital; houses placarded; attending physician gives instructions.	No; 921; don't know.	Usual methods	Twenty-five, generally one room in each.	Don't know ......
No isolation hospital; houses where contagious diseases exist are isolated.	Yes; about 250; 275 persons have been vaccinated.	Chloride of lime used freely; clothes boiled and soaked in a solution; rooms fumigated, etc.	Six; 6, average 35 to 45.	......
All isolated, houses placarded.	......	......	Four; average attendance 30.	......
......	No; 24; don't know.	......	One; 1, attendance 7.	857 cubic feet ......

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and subsoil.
Bertie A.— H.— P.—3,794.	Not generally used		
Binbrook A.— H.— P.—1,511.	Forms supplied	No factories	Wells
Blanford A.— H.— P.—1,710.		None	Wells; mostly gravel
Blenheim A.—69,120. H.—3,000. P.—5,000.	Not used	One woollen factory, 15 hands; 1 furniture factory, 20 hands; 1 cheese factory, 2 hands.	Soil is varied
Brock A.— H.— P.—3,578.	Not used	One cheese factory, 2 hands.	Clay loam
Brooke A.— H.— P.—3,196.		Three cheese factories, 2 in each.	Wells principally
Brougham A.— H.— P.—479.			Springs generally
Burford A.— H.— P.—4,478.	M. H. O. supplied	One canning factory, 30 employees; 3 or 4 cheese factories.	Chiefly wells
Brunel A.— H.— P.—618.	Yes; yes	None	Wells; sand and clay, mixed with stone and rocks.
Burleigh and Anstruther A.— H.— P.—1,330.	Yes.	One cheese factory, 2 hands in each.	All wells or springs; soil sandy loam, sub-soil, pure sand.
Burpee A.— H.— P.—126.	Not supplied.	None	

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal.	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	....	....	....	....
No inspection..	One	By householder	No particular system	None.
Cannot say ; no....	Two ; no license....	....	....	None.
1,000 at least ; no ; none.	Six ; none licensed ; no special drainage; are carefully inspected ; offal burned.	Householder ; night soil buried.	None..............	None.
None..............	One	Householder........	....	....
Cannot give number accurately ; think there are over 1,000.	Three or four ; none licensed.	Householder........	....	....
....	None..............	....	....	....
600 as far as is known; no inspection.	None licensed ; natural drainage; offal is fed to hogs and buried.	Used as manure for the land ; householder.	Some dry earth closets.	Slaughtering of animals.
Cannot say ; no examination.	None ; none........	By householder and tenant.	Closets ; buried ; closets cleaned once a year.	None.
Have no statistics of dairy cows.	None..............	By householder.....	Pit closets..........	None.
None..............	None	....	....	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Calvin A.— H — P.—432.	M. James, M.D		Diphtheria, 8 cases, 1 death.
Caledonia A.— H.— P.—1,601.			No contagious diseases for the year 1894, although there were some cases of sickness.
Cartwright A.— H.— P.—1,950.	No M. H. O	Notices were posted up requiring all occupants of premises to have their wells, closets, cellars and other premises thoroughly cleaned.	No contagious diseases were reported for this year.
Colborne Tp A.— H.— P.—		A general inspection of township was made and everything found in a clean and sanitary condition.	
Camden A.— H.— P.—2,657.	Dr. Stewart, M.H.O.	Premises are inspected only when there is complaint.	None.
Cambridge. A.— H.— P.—2,369.	None appointed	By members of board of health.	Two cases of typhoid
Carden A.—5,760. H.—106. P.—710.	T. Blanchard, M.D.; John Martin, sanitary inspector.		Two cases of diphtheria, 1 death.
Cardwell A.—5,700. H.—160. P.—4,250.	Dr. Waddy		Diphtheria, 1 case
Carlow A.— H.— P.—490.	No M.H.O.; R. O. Wilson, sanitary inspector.	None.	
Chaffey A.—44,669. H.—270. P.—841.	H. L. Howland, M.D.; W. H. Lehman, sanitary inspector.		One case scarlet fever, 1 death; 5 cases diphtheria, 1 death.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
None..............	None............ ..	Burning sulphur, washing walls with solution from M. H. O., whitewashing walls with lime; all clothes in diphtheria cases are burned.	Three schools, 1 room in each.	Don't know ....
....	....	....	....	....
....	All teachers are notified as to the requirements of proper vaccination.	....	....	....
....	....	....	....	....
Quarantine; no isolation hospital, but arrangements were made for tent in case of smallpox.	No; about 200 vaccinated in 1894.	None done this year; under direction of board.	Fifteen sections; 7 unions with adjoining townships; 15 rooms; average attendance of 50 in each.	....
By placarding; no hospital.	No; 1,084; some children were vaccinated, but can't say how many.	Cannot say.........	Sixteen schools; generally one room to each.	Don't know ....
No isolation hospital; isolation carried out by removal to another house.	No; 200; none.....	Fumigation by sulphur; washing the walls, etc., with bichloride of mercury, etc.	Seven schools; 7 rooms, average 12 to each.	373 cubic feet.... ..
Isolation at the patient's home.	....	....	Three schools; 1 room in each.	....
....	No; 260; none reported.	....	Four schools: 4 rooms.	....
All patients confined in their houses.	Yes; 277 vaccinated.	Carried out under M. H. O.	Nine; 9....	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Calvin A.— H.— P.—432.	None	None	Natural springs; sub-soil, clay in some places and gravel in others.
Caledonia A.— H.— P.—1,601.			
Cartwright A.— H.— P.—1,950.			
Colborne Tp			
Camden A.— H.— P.—2,657.	M. H. O. has forms	None except small sawmills.	From wells; clay, gravel and blue clay.
Cambridge A.— H.— P.—2,369.	Yes.	Six sawmills, 1 powder factory, 3 grist mills, and 7 factories.	Wells; sandy loam
Carden A.—5,760. H.—106. P.—710.	None, but will in future.	None	Limestone
Cardwell A.—5,700. H.—160. P.—4,250.		No factories	
Carlow A.— H.— P.—490.		One cheese factory, 1 employee.	Red loam, sub-soil hard pan.
Chaffey A.—44,669. H.—270. P.—841.	No	None	

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets, etc. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
None.	None.	Householder	Dry earth closets; no contract removal.	None.
......	......	......	......	......
......	......	......	......	......
......	......	......	......	......
None.	Four; natural drainage in each case; offal is partly fed to hogs and the remainder burned.	By householder	Privy pits generally.	None.
About 2,500; no; none.	No large slaughter-houses.	Householder	Dry earth closets	None.
720	None	By householder	Closets	None.
......	......	......	......	......
......	None	......	......	......
......	Three	......	......	......

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Chapman A.— H.— P.—672.	P. D. Tryerman, M.D	Inspection spring and fall.	None
Charlottenburg A.— H.— P.—4,870.	A. Falknier, M.D.; L. Cattanaugh, sanitary inspector.	Sanitary inspector visits all cheese factories, creameries and slaughterhouses twice during the year.	Scarlatina epidemic during the year, 10 or 12 deaths; typhoid, 2, 1 death.
Charlotteville A.— H.— P.—3,551.	W. J. McInnis, M.H.O.; Albert Wood, Thomas L. Roberts, sanitary inspectors.		Health of people of this township during year very good; very little sickness.
Caledon A.— H.— P.—4,285.	James Algie, M.D.; R. Davis, sanitary inspector.	Each member of the board looks after his particular neighborhood, and all nuisances are reported to the inspector and M.H.O.	Scarlatina, 3 cases; diphtheria, 28 cases, 4 deaths; typhoid, 2 cases.
Chatham A.— H.— P.—4,813.	Dr. Rutherford, M.H.O.		Scarlatina, 2 cases; diphtheria, 4 cases; typhoid, 3 cases; smallpox, 1 case.
Clarke A.—643,200. H.— P.—4,319.		Inspection made when complaints come in.	Scarlatina, 9 cases; typhoid, 4 cases.
Clarence A.— H.— P.—4,371.	N. Deskosiers, M.D	Inspectors frequently examine the premises in villages.	Scarlatina, 200 cases, 25 deaths; diphtheria, 10 cases, 3 deaths; typhoid, 9 cases.
Cockburn Island A.— H.— P.—148.	No M. H. O		None
Colchester, S A.— H.— P.—2,495.	W. S. Park, M.D		Scarlatina, 4; smallpox, 1.
Crowland A.— H.— P.—1,037.	S. H. Glasgow, M.D.; M. Doan, sanitary inspector.	No inspection made, not considered necessary.	None

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality, and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out.	Number of schools, number of rooms, and attendance in each.	Average cubic air space to each pupil.
None.	No; about 100	None, except whooping cough.	Three; 1 room each; No. 1, 50; No. 2, 12; No. 3, 8.	381 cubic feet.
No hospital.	About 1,400	Sulphur fumigation, scrubbing and washing.	Twenty; 23; average about 40.	Do not know
....	....	....	....	....
By quarantine cards and the prohibitory measures of the Public Health Act.	No	Physicians in ordinary cases supply disinfectants, but in many cases it is done by M. H. O.; bichloride of mercury, chloride of lime, carbolic acid fumigation.	Nineteen	....
Smallpox isolated on lot where it broke out.	Yes; don't know how many.	Thoroughly carried out.	....	What is generally found in country schools.
Isolated at home; no hospital.	No; none so far as reported.	Disinfection by attending physician.	Nineteen schools; 20 rooms.	Do not know.
None.	Yes; 700; 500.	....	Twenty	....
....	No; 32; none vaccinated in 1894.	....	Two schools; 1 room.	240.
No hospital; isolation in houses only; smallpox isolated at lighthouse.	Yes; possibly 250 primary vaccinations.	Very imperfectly	13; 16 rooms; don't know attendance.	Don't know
None	No.	Fumigation and disinfection.	7; 1 room in each	Don't know

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employes in each.	Water supply. Where wells are used give character of soil and sub soil.
Chapman. A.— H.— P.—672.	No; no	One sash and door factory, 2 employees.	Springs and wells; soil heavy clay.
Charlottenburg A.— H.— P.—4,870.	M.D's. are supplied with forms and report.	Three creameries, 8 or 9 cheese factories, 2 or 3 slaughterhouses employing about 2 persons each.	Good wells.
Charlotteville A.— H.— P.—3,551.			
Caledon. A.— H.— P.—4,285.	Yes; yes	Three woolen factories, average 20 employees.	From wells; one half of township is sandy loam and the other is heavy clay.
Chatham A.— H.— P.—4,813.	Not well observed in rural districts.	Chatham waggon works, employing from 50 to 100 men; flour mills, 20 men.	Ordinary wells
Clarke. A.—643,200. H.— P.—4,319.	Supplied to Dr's. only	None	Varies greatly
Clarence. A.— H.— P.—4,371.	None	Ten cheese factories, 10 hands.	Wells; attention has been drawn to the fact of wells not been cleaned.
Cockburn Island A.— H.— P.—148.	None	None	No wells; water is from a creek running through the woods.
Colchester, S A.— H.— P.—2,495.	No forms	Sash and door factory, 6 hands.	Bored wells, springs and open wells; sand and clay.
Crowland A.— H.— P.—1,037.	Yes	None	Clay and sandy loam

TOWNSHIPS.—*Continued.*

No. of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil, whether by contract or only by householder.	Sewage. How disposed of, whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
About 350; no; none.	None	By householder	Dry earth closets and cess pits.	None.
A large number; no inspection for tuberculosis, although it is generally suspected to exist; saw one marked case recently in a slaughterhouse. Something should be done by proper authorities.	None licensed; well kept.	Buried by householder.	....	Not any.
....	None	....	....	....
No regular dairy system; no inspection.	Seven; offal carted away and buried.	No regular system of disposal; general measures of cleaning yards and privy pits are urged by the board; each householder expected to do his own.	No sewage system; no contract removal.	None.
Do not know.	Cannot tell	By householder	....	None.
None	Three slaughterhouses.	By householder	....	None.
2,000	Find slaughterhouses a great nuisance.	Care taken to have all privies emptied.	....	....
Fifty-five; no examination.	None	Householder	Surface ditch; no dry earth closets.	None but fishing station, may be at times considered such.
Don't know number; no examination.	None licensed; no drainage.	Householder	....	None.
150; no	One; no license	By householder	Dry earth closets	None.

TOWNSHIPS—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Culross A.—56,000. H.— P.—3,101.	J. Gillies, M.H.O		15 cases typhoid
Dalhousie and N. Sherbrook. A.—70,810. H.—500. P.—1,927.	A. Bradford, M.H.O		None
Darling A.—44,200. H.—191. P.—716.	None appointed	Inspection not necessary.	
Darlington A.—68,300. H.— P.—4,440.	Dr. Mitchell, M.H.O.	No regular system simply attend to complaints made.	Scarlatina, 8; typhoid, 14.
Dawson (unorganized)			
Delaware A.— H.— P.—1,561.	F. H. Mitchell, M. H.O.; Chas. Edwards, sanitary inspector.	House to house inspection.	
Denbigh, Abinger and Ashby A.— H.— P.—	Chas. D. Doig, M.D.	No inspection this year.	None
Dereham A.— H.— P.—3,568.	Drs. Minchell & Kester, M. H. O's.; John George, sanitary inspector.	General inspection by sanitary inspector.	None reported
Derby A.— H.— P.—1,816.	C. E. Barnhart, M.H.O.; James Agnew, sanitary inspector.	Sanitary inspector inspects schools, slaughterhouses and creameries once a year and attends to specials when required.	Scarlatina, 5, 1 death; diphtheria, 4, 1 death.
Dorchester, N A.— H.— P.—3,704.	Dr. Graham, M.H.O.	When complaints are made.	Diphtheria, 1 case; typhoid, 4 cases.
Douro A.—39,000. H.—547. P.—2,000.	John R. Fraser, M.H.O.; John Quinn, sanitary inspector.	No general inspection.	Typhoid, 1 case

TOWNSHIPS—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil
No isolation hospital but contagious diseases are isolated as much as the dwellings will admit of.	No; don't know; don't know.	Bed clothes changed frequently in cases of typhoid fever; stools received in carbolic solution and burned immediately.	11 schools; 1 room in each.	Don't know ....
None	No; 500; don't know.	....	12 schools; about 30.	....
....	No	None	6 schools; 6 rooms..	Don't know ....
Only as made in private dwellings by physician in charge.	No; don't know of any vaccinated in township.	Done in different ways and left to judgment of physician in charge.	23; chiefly 1 room in each; average attendance from 15 to 55.	About 270 cubic feet.
....	Yes; 25; all vaccinated.	None	One; one; 27 attendance.	....
Have no isolation hospital; not quarantined.	Yes; 498; 50 vaccinated in 1894.	Has not been carried out.	6; 7; about 50 to each room.	300 cubic feet ......
No isolation hospital.	No; about 200; none vaccinated during the year.	No diseases, and no disinfection.	7 schools; 1 room in each.	....
No isolation hospital. Isolated in dwellings.	Yes; 479; 418 vaccinated.	None	11 schools	....
No hospital.........	No	Cannot give details .	8 schools	Cannot say.........
Placarding.	No action considered necessary.	By using disinfectants, etc.	....	....
Isolation in room of dwelling; no isolation hospital; patients can be sent to Nicholl's and St. Joseph's hospitals, Peterborough.	No; 577; none vaccinated in 1894.	No contagious diseases in township in 1894, except one case of typhoid, when excreta was carefully destroyed by carbolic acid and buried.	Ten; 1 room in each; about 40.	....

TOWNSHIPS—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Culross A.—56,000. H.— P.—3,101.	Not supplied	1 butter factory, 1 cheese factory, 2 employees in each.	Wells and springs; mostly limestone gravel.
Dalhousie and N. Sherbrook. A.—70,810. H.—500. P.—1,927.	No forms used	None	Wells and springs; sandy loam.
Darling A.—44 200. H.—191. P.—716.		None	Principally springs
Darlington A.—68,300. H.— P.—4,440.	No forms used	None, except 2 cheese factories.	Wells; clay, sand or loam, with gravelly sub-soil.
Dawson (unorganized)		One saw mill, employing 40.	Wells; clay loam
Delaware A.— H.— P.—1,561.	Not supplied	Three: cheese factory, apple evaporator, cider mill; employing 2, 8, 4 respectively.	Wells; clay loam, with gravelly sub-soil.
Denbigh, Abinger and Ashby A.— H.— P.—		None	Wells chiefly; soil sandy loam, sub-soil mostly gravel; also many springs containing the best water.
Dereham A.— H.— P.—3,568.	Both supplied; no	Nine cheese factories, 27 employees.	Loam, clay sub-soil
Derby A.— H.— P.—1,816.	Yes; and all medical practitioners.	Two creameries, 2 slaughterhouses, all in good condition. The only factory strictly speaking is a woollen factory.	Remarkable good well water; soil mostly clay.
Dorchester, N A.— H.— P.—3,704.		Seven cheese factories employing 28 men; 1 saw mill, sash and door factory, employ'g 6 hands.	Wells generally
Douro A.—39,000. H.—547. P.—2.000.	No; no	Two cheese factories, 3 in each.	Wells

TOWNSHIPS—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
Don't know; no....	One; open drain into a running stream; offal fed to pigs.	....	....	....
Don't know; no....	None	Householder........	Dry earth closets; no contract.	....
....	None	....	....	....
Don't know; no inspection.	One; no license	Householder........	No arrangement, everyone looks after their own.	None.
50 cows; no examination.	....	....	....	....
Don't know; no inspection.	Two; not licensed; offal fed to pigs; natural drainage.	Garbage fed to pigs; night soil disposed of by householder.	Sewage drained by natural channel.	None.
....	None	Householder	No dry earth closets; no contract removal.	None.
Not know; no tuberculosis.	Three; tile drainage; generally fed to pigs.	Both ways	No dry earth closets.	None.
Cannot tell; no inspection.	Two licensed; cannot give further particulars.	Can t give anything specific.	Don't apply	None.
About 5,000; no inspection.	Five; no license; all isolated.	Every person required to look after their own.	....	None.
850; no; none.	None...............	No contract removal.	No contract removal.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Dover A.— H.— P.—3,814.	F. S. Angus, M. H. O.; James Leney, sanitary inspector.	Inspection of premises, etc., when complaint is made.	Scarlatina, 4 cases; typhoid, 7 cases.
Dawn A.— H.— P.—1,999.	G. O. Lockhart, M.H.O.	Only when called on to inspect.	Typhoid, 3 cases reported.
Downie A.—48,000. H.— P.—2,765.	J. J. Paul, M. H. O.	None special, except in case of complaint.	Scarlatina, 20 cases; diphtheria, 7 cases; typhoid 6 cases.
Dumfries, N A.— H.— P.—2,395.	Dr. A. Thomson, M. H. O.; John McNab, W. Scringer, sanitary inspectors.	Sanitary inspectors are always ready to inspect when complaints are made.	Scarlatina, 15; diphtheria, 4; typhoid, 12.
Dumfries, S A.— H.— P.—2,815.	J. L. Addison, M.H.O.		In the early part of the current year our township was visited by measles and scarlet fever, of the latter 3 deaths resulted; typhoid fever of a mild type was rather prevalent in St. George; many cases of measles and scarlet fever were not attended by physicians and the diseases in this way spread before coming under the supervision of the board.
Dunn A.—14,735. H.— P.—930.	G. A. McCallum, M.H.O.	General notice is taken during visits in practice.	Scarlatina about 20 cases.
Easthope, S A.— H.— P.—1,806.	Dr. R. Whiteman, M.H.O.	None	None

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Patients are kept in a room by themselves, and notification is given not to attend school or public entertainments.	No: about 500 children; a large majority were vaccinated	Patients given a bath; clothing soaked in bichloride solution; house well fumigated by burning sulphur in a moist atmosphere.	Eleven: average attendance about 40.	....
Isolation practicable only so far as farm houses could accommodate the hospital.	Yes: 1,120; 520 vaccinated successfully.	Have no details at hand; cases referred to Dr. Bull and Wyley of Dresden.	Sixteen schools, 1 room in each; average daily per year, 26.	....
Patients are kept as far from others as possible; no isolation hospital.	Vaccination not compulsory; a large percentage of children not vaccinated.	As directed by pamphlet sent out by Provincial Board of Health.	In township of Ellice, 10.	Do not know ....
No hospital.........	No.................	Some cases sent to general hospital, Galt.	Ten schools, average 40.	....
....	....	....	....	....
No isolation hospital; houses placarded; intercourse with public forbidden.	No.................	In scarlet fever cases the free use of carbolic acid was made, and apparently with good effect.	Five schools, 5 rooms, 30, 32, 34, 35, 38 in attendance.	400 cubic feet ......
No hospital; private efforts the only methods.	No; about 350; none.	Such as medical men generally use.	Six schools, 7 rooms, average about 50 to each.	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Dover A.— H.— P.—3,814.	Neither are supplied	None	Heavy clay, quicksa sub-soil.
Douro A.— H.— P.—1,999.	No	One cheese factory, 3 hands; 3 stave mills, about 75 hands; 3 saw mills, 3 or 4 each; 1 shingle mill, 2 hands; chopping mill, 1 hand.	Well supply; clay, stiff, hard, sub-soil, heavy blue clay bed and gravel below; wells run from 18 to 70 feet deep.
Downie A.—48,000. H.— P.—2,765.	None supplied	Do not know.	Loam and clay sub-soil.
Dumfries, N. A.— H.— P.—2,395.	None supplied	One cheese factory, 2 employees.	Water supply; good gravel sub-soil.
Dumfries, S. A.— H.— P.—2,815.			
Dunn A.—14,735. H.— P.—930.	Yes.	None	Wells; clay soil, sub-soil clay and rock limestone.
Easthope, S. A.— H.— P.—1,806.	Not supplied.	One woollen mill, 2 furniture factories, 1 stave and barrel factory, 1 cheese factory, 1 pump factory, employing 10, 20, 10, 5, 3, respectively.	Wells; mostly sandy loam.

TOWNSHIPS.--*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
No dairy kept in municipality.	Two slaughterhouses; no nuisances.	Householder........	Pit system..........	None.
Cannot give information; no inspection, as tuberculosis is unknown.	None in township...	By householder	Dry earth closets ...	None.
Do not know; no; none.	None...............	By householder	Only dry earth closets in schools.	None.
About 250; no inspection.	Seven; no system of drainage; offal is fed to hogs.	By householder.....	....	....
....	....	....	....	....
About 1,000 cows; no inspection; no herds examined.	None.........	Householder.... ...	Ordinary way	None.
About 3,200; no examination made, but not positive that none exists.	Three; no license required; not drained; offal generally fed to hogs.	Householder........	Used in gardens and teamed to farms with stable manure	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M.H.O and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Edwardsburg A.— H.— P.—3,750.	S. C. McLean, M. H. O.; T. H. Burton, sanitary inspector.	Inspection only in village of Spencerville and one case of nuisance in township.	Diphtheria, 10 cases, 1 death; typhoid, 2 cases.
Ekfrid A.— H.— P.—2,577.	L. Hytenrouch, M.H.O.	....	Diphtheria, 3 cases......
Egermont A.— H.— P.—3,150.	A. S. Brown, M.H.O...	Municipality is divided into five districts, and each member of local board supervises his district.	Until medical men furnish township clerks with this information we cannot give it; only those in our immediate locality, and such would be very indefinite.
Elderslie A.—56,000. H.— P.—2,412.	No M. H. O., but all members of Board are appointed sanitary inspectors for their respective districts.	Each sanitary inspector has the oversight of his own district.	None ....
Elzevir A.— H.— P.—951.	Geo. Shaw, M.H.O....	....	None ....
Ernesttown A.— H.— P.—2,862.	J. E. Mabee, M.H.O ...	Sanitary inspector makes house to house inspection, and all complaints are investigated.	Diphtheria, 11 cases, all caught from 1 person.
Elma A.— H.— P.—3,832.	....	Owners of cheese factories and slaughter-houses are notified to keep their places strictly clean.	A few cases of diphtheria.
Erin A.— H.— P.—3,468.	....	....	A few isolated cases of diphtheria and scarlet fever, and one of typhoid, have been reported; happily no deaths occurred.
Esquesing A.— H.— P.—4.027.	....	Sanitary inspector made several visits during the year, and the municipality is in a good sanitary condition.	Only a few cases of contagious diseases existed during the year, and they were looked after very promptly by the chairman of the board, who is a physician.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
By keeping patients isolated in homes; no hospital.	No..............	....	Twenty-four schools; 25 rooms.	....
No hospital; isolated at residences.	Council entered into contract with M. H. O.; 10 or 15 vaccinated; 733 school children between 5 and 21 years of age.	Sulphur; washing all woodwork in bichloride solution; whitewashing; painting.	....	....
No isolation hospital.	No; was recommended by local board.	....	Fourteen; 1 room in each; don't know.	Have not the size of school houses, but our inspector is very particular about it.
....	No; 753; vaccination is very generally attended to.	....	Twelve schools; 1 room in each; attendance, 35 to 65.	Cannot say.....
None	No; 192; don't know.	....	Seven; 8...........	....
We isolated all cases of contagious diseases.	....	Fumigated houses and clothing.	Twenty-one schools.	....
Houses placarded...	....	....	....	....
....	Arrangements were made with a physician to visit several places for the purpose of vaccination; a goodly number availed themselves of the opportunity.	....	....	....
....	....	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Edwardsburg A.— H.— P.—3,750.	No forms	No factories	Wells
Ekfrid A.— H.— P.—2,577.	Verbal reports used	Two cheese factories; 5 hands; good condition.	Wells; clay sub-soil; sand or loam in parts.
Egremont A.— H.— P.—3,150.	No forms	Two creameries; 1 cheese factory; 1 employed in each.	Wells and springs; loam and gravel sub-soil.
Elderslie A.—56,000. H.— P.—2,412.		One creamery; 1 cheese factory.	Wells, streams and springs; clay; blue clay.
Elzevir A.— H.— P.—951.			Wells, sandy loam, gravel bottom.
Ernesttown A.— H.— P.—2,862.	Forms supplied to both	Cheese factories; 5 woollen factories; 2 chair factories.	Wells; Bay Quinte; Odessa river.
Elma A.— H.— P.—3,832.			
Erin A.— H.— P.—3,468.			
Esquesing A.— H.— P.—4,027.			

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses: Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
No inspection.......	None..............	....	....	None.
.. ..	....	... .	....	....
None (unless farmers' cows are classed as such); no.	One on a farm; no license.	By householder.....	Chiefly by dry earth closets; no contract removal.	None.
Six thousand four hundred and eighty six cattle; no inspection this year.	None..........	....	....	....
One thousand two hundred and eighty-six; no.	Two; offal thrown away.	Householder........	....	....
About 3,000 cows. ..	We compel butchers to comply with regulations, and offal is removed.	Generally burned or buried.	....	. ...
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....

TOWNSHIPS—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases
Euphrasia A.— H.—1,000. P.—3,297.			The township has been free from diphtheria for the past year; scarlet fever and whooping cough were prevalent; there were 2 deaths from the former disease.
Ellice A.— H.— P.—			Scarlatina, 3 cases
Emily A.— H.— P.—2,195.	Vincet Cornwall, M.H.O.; no sanitary inspector.	No inspection	None
Ennismore A.— H.— P.—838.	None	No inspection	None
Eramosa A.— H.— P.—2,807.	J. R. Dryden, M. H. O.	No general inspection	Diphtheria, 8 cases; typhoid, 6 cases.
Essa A.— H.— P.—3,960.	John W. Norris, M.H.O.	General inspection in month of May.	Scarlatina, no cases of serious nature; diphtheria, no fatal cases; typhoid, some cases, only one death.
Fenelon A.— H.— P.—2,430.	J. W. Ray. M.D., M.H.O.		Diphtheria, 16 cases
Ferris A.— H.— P.—459.	J. B. Carruthers, M.D., M.H.O.	No general inspection	Diphtheria, 11 cases
Flamboro' A.— H.— P.—2,661.	T. O. McGregor, M.D., M.H.O.	No methods are followed.	Typhoid, 4 cases
Fullarton A.— H.— P.—2,151.	W. J. Armstrong, M.D., M.H.O.		Scarlatina, 37 cases, 2 deaths; typhoid, 2 cases.

TOWNSHIPS—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	... .	....	....	....
....	It has been decided this year to have school children vaccinated.	....	....	....
None	No; cannot say; none.	....	Twelve; 1 room in each.	About 250 cubic feet.
None	No; about 100; no vaccination.	....	Four schools; 1 room in each; attendance about 25.	....
All cases isolated, some at homes when suitable; houses placarded; no hospital; some cases are removed to Guelph hospital.	Not compulsory; about 600 school children in municipality; 435 vaccinated in 1894.	Thorough cleansing of houses; repapering, whitewashing, etc., using disinfectants freely, fumigation, etc.	Ten schools; 1, 3 rooms, 40 pupils; 1, 2 rooms, 40; 8, 1 room in each, 50.	Four hundred cubic feet.
Not any...........	No......	None...............	Sixteen schools; well built and plenty of air.	School inspector says the requirements are faithfully adhered to.
Isolated in their homes.	No; no record of any being vaccinated.	....	Ten schools....	....
Isolation of residences; no isolation hospital.	Yes; children and adults; 166 vaccinated.	By means of sulphur burned and carbolic acid diluted.	Two; 1 room in each.	Nine hundred cubic feet.
No isolation hospital.	No; children from 5 to 14 years, 309; from 5 to 21 years, 796.	....	Six schools; nine rooms.	Unable to say......
No isolation hospital; where possible kept patient apart from other members of family; no one from family allowed to attend school.	Vaccination not compulsory; 934; none vaccinated.	Fumigation with burning sulphur, boiling of clothing and soaked in a solution of carbolic acid.	Seven schools	Schools are not sufficiently examined.

TOWNSHIPS—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Euphrasia A.— H.—1,000. P.—3,297.			
Ellice A.— H.— P.—			
Emily A.— H.— P.—2,195.	To medical men only	None	Wells; clay loam; clay sub-soil.
Ennismore A.— H.— P.— 838.		One cheese factory, 2 employees.	
Eramosa A.— H.— P.—2,807.	None supplied	One woollen mill, 25 employees; 1 factory 10 hands.	Wells and living springs; soil, clay sub-soil, sand or gravel and rock limestone.
Essa A.— H.— P.—3,960.	No	None	Good, pure spring water.
Fenelon A.— H.— P.—2,430.	None.	None	
Ferris A.— H.— P.—459.	No forms used	None	Wells and lake water
Flamboro' A.— H.— P.—2,661.	No forms	None	Wells and running streams; soil varies.
Fullarton A.— H.— P.—2,151.	No; none supplied and none used	Two cheese factories, 3 employees in each; 1 cheese-box factory and saw mill, 5 employees.	Varied

TOWNSHIPS—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis	Slaughterhouses: Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	....	....	....	....
....	....	....	....	....
No dairy in township.	None..............	Householder........	No dry earth closets in township.	None of any kind.
....	None..............	....	....	None.
No dairy cows......	Two slaughterhouses, not licensed but safe distance from any dwelling ; offal is fed to hogs, or put on land as a fertilizer.	By householder only.	No sewage system...	None.
Impossible to say ; this is a very fertile township ; each farmer generally keeps from 1 to 10 ; no tuberculosis ever reported.	Three slaughter houses but removed from village where located, and precaution taken to burn or inter offal.	Our villages not large enough to suffer from this source.	Dry earth in some places ; others, deep pits.	....
....	None..............	....	....	....
No inspector......	None.............	Householder	No system of sewage.	None.
Unable to say ; no inspection.	Two slaughterhouses; no complaints.	....	....	None.
Don't know ; no inspection ; no examination.	One ; none licensed ; offal used as manure.	By householder	....	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Faraday .... A.— H.— P.—750.	....	....	The municipality was free from sickness up to the end of December when diphtheria broke out, and 2 deaths occurred; no cases exist at present.
Fitzroy.... A.— H.— P.—2,607.	....	....	The recent outbreak of diphtheria is about over; at present no one is suffering from the disease; 20 cases and 6 deaths being the result of the outbreak.
Flos .... A.— H.— P.—2,906.	J. B. McClinton, M.H.O.	....	In the spring and early summer there were 16 cases of diphtheria, of which 4 cases proved fatal; careful isolation and other means were used to prevent the spread of the disease.
Garafraxa West .... A.— H.— P.—	J. Dow, M.D., M.H.O.; R. J. Black, sanitary inspector.	All schoolhouses, slaughterhouses, yards and closets in village of Bellwood were examined and instructions given to clean up where necessary.	Scarlatina, exact number not known; diphtheria, 4 cases; typhoid, 3 cases.
Garafraxa East .... A.— H.— P.—	Dr. Lewis, M. H. O.; Donald Geon, sanitary inspector.	....	Diphtheria, 7 cases ....
Gainsborough .... A.— H.— P.—2,382.	J. W. Collver, M.D., M. H. O.	Inspection is made by members of the board when cases are reported.	Typhoid, 1 case....
Georgina .... A.— H.— P.—1,700.	M. Ferguson, M.D., M. H. O.	....	Typhoid, 1 case....
Glanford .... A.— H.— P.—1,612.	C. Smith, M.D., M.H.O.	When complaint is made premises are inspected.	None ....
Glamorgan .... A.— H.— P.—477.	....	....	Three fatal cases of diphtheria.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	....	....	....	....
....	....	Houses where contagious diseases existed have been disinfected.	....	....
....	....	....	....	....
No isolation hospital; patients kept in a separate room and attended only by their nurses.	Yes ; 270 vaccinated in 1894 ; about 600 school children in municipality.	In diphtheria ca inside of houses washed with carbolic acid solution; sulphur burned in rooms and bedding boiled.	Eight schools ; nine rooms.	Cannot say ......
....	....	....	Nine..............	....
Isolation as far as circumstances will permit.	No	By disinfectants....	Eleven schools, average attendance 34.	300 cubic feet.......
Patients isolated on their own premises	No ; 430 ; none.....	....	Six ; 8..............	....
No cases reported, no hospital.	No; none vaccinated.	No contagious diseases have been reported.	Six schools....	Do not know ....
Proper isolation carried out.	....	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. C. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Faraday A.— H.— P.—750.			
Fitzroy A.— H.— P.—2,607.			
Flos A.— H.— P.—2,906.			
Garafraxa West A.— H.— P.—	M.H.O. supplied only	No factories	Wells and springs; clay and gravel.
Garafraxa East A.— H.— P.—		None	
Gainsborough A.— H.— P.—2,382.	No	None	Clay loam, heavy clay sub-soil.
Georgina A.— H.— P.—1,700.	None	None	Wells
Glanford A.— H.— P.—1,612.	Do not know	None	Wells; soil generally clay soil.
Glamorgan A.— H.— P.—477.			

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal.	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
No dairy cows; one herd examined for tuberculosis but not found.	One slaughterhouse; offal is buried or burned.	Garbage and night soil buried or burned by householder.	Dry earth closets; contract removal by some.	None.
....	None	....	....	None.
Cannot say; no; none.	None............	....	....	....
No inspection	None	....	....	....
Don't know	Not licensed	Removed to fields for manure.	....	None ....
....	....	....	....	....

TOWNSHIPS—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Glenelg .... A.— H.— P.—2,930.	Dr. Gun, Durham, M. H. O.	Township is divided in 5 districts and each district is under the charge of local board as inspectors.	Typhoid, 1 case; diphtheria, 1 case.
Glouchester .... A.— H.— P.—5,866.	Dr. Kennedy, M. H. O.	General inspection. ...	Scarlatina, 27 cases, 3 deaths; diphtheria, 29 cases, 9 deaths.
Goderich .... A.— H.— P.—2,592.	Dr. Whitely, M. H. O...	....	....
Gordon .... A.— H.— P.—934.	....	By three board of health officers.	None ....
Gore Township .... A.— H.— P.—1,119.	G. H. Bowles, M. D., M. H. O.	Usual methods	Scarlatina, 12 cases; diphtheria, 1 case.
Gosfield North .... A.— H.— P.—1,764.	G. McKenzie, M.D., M. H. O.; Jas. Bennett, sanitary inspector.	....	Typhoid, 3 cases........
Gosfield South .... A.— H.— P.—1,945.	C. B. Oliver, M.D., M. H. O.; and J. E. Jenner, M.D., M.H.O.	None....................	Scarlatina, 7 cases ......
Gower South .... A.— H.— P.—789.	None appointed.........	None	None ....
Gower North .... A.— H.— P.—2,117.	J. B. Harkness, M.D., M. H. O.	Left in hands of M. H. O. who considered no special inspection necessary.	Scarlatina, 12 cases, 1 death; typhoid, 4 cases.
Grey....................... A.—65,000. H.— P.—3,600.	M. Ferguson, M. D., M. H. O.	Inspection is made by members of the board in their own districts.	Diphtheria, 1 case. . . ..
Greenock.................... A.— H.— P.—2,921.	Lewis Lamb, F. Cunningham, sanitary inspectors.	Travelled through all the school sections and inspected schools, slaughterhouses and cheese factories.	Scarlatina, 30 cases, 1 death; diphtheria, 4 cases; typhoid, 2 cases.

TOWNSHIPS—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
The only method of isolation is placarding house; no hospital.	No..................	Houses are disinfected under directions of family physician.	....	....
We isolate in contagious diseases in hospital at Ottawa or in private houses.	....	Burning sulphur with closed doors, washing walls with carbon solution, etc.	Twenty-nine	Don't know ....
....	No..................	....	Ten schools; 2 rooms in each.	....
None..............	No..................	....	Four; 30 to 50 in attendance.	....
Usual house precautions; no hospital.	No; 230............	No special methods, each doctor has his own.	Four; 4; 230.......	....
No isolation hospital, confine patients in isolated room.	Yes; 230 vaccinated; 512 children in municipality.	Rooms are fumigated walls washed.	Seven; 1; average attendance in each room 34.	About 250 in 4 schools, 220 in 2 schools and 160 in one school.
No isolation hospital.	Yes; about 400 vaccinated.	None..............	Twelve........	Cannot say.........
None..............	No..................	None	Four; 1; cannot give attendance.	Cannot say.........
Isolation in individual cases as far as practicable.	No; none vaccinated in 1894.	Usual precautions taken in individual cases.	Eight; one of which has 2 rooms.	....
No isolation hospital.	No; 1,412; can't say how many vaccinated in 1894.	Walls and floor of room and furniture washed with bichloride of mercury solution, 1-2,000; afterwards fumigated with sulphur, and sputa, excreta, etc., disinfected.	Twelve schools; 14 rooms, cannot say how many in each.	....
No hospital, isolation by placarding.	No; none vaccinated 1894, notices have been sent to trustees calling their attention to the matter.	Used vapor of carbolic acid, scrubbing walls, floors and scalding clothes; burning saltpetre and sulphur in the rooms, using 12 lbs. in an ordinary house.	Eight; 11 rooms; about 40 in each.	About 200 feet......

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and H. M. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Glenelg A.— H.— P.—2,930.	M. H. O. only	None	Wells; sandy loam and gravel.
Gloucester A.— H.— P.—5,866.	Don't know	None	Wells
Goderich A.— H.— P.—2,592.	No	None.	All kinds of soil
Gordon A.— H.— P.—934.	Don't know	None	Wells are used, clay loam.
Gore Township. A.— H.— P.—1,119.	No	None	Wells; heavy clay mostly.
Gosfield North A.— H.— P.—1,764.	Not supplied	None	Partly from shallow wells but principally from artesian wells; gravel with blue clay sub-soil.
Gosfield South A.— H.— P.—1,945.	M. H. O. only	None	Wells only; all kinds of soil.
Gower South A.— H.— P.—789.	None	None	Cannot say.
Gower North A.— H.— P.—2,117.	None	None	Wells; mostly clay, sub-soil hard pan.
Grey A.—65,000. H.— P.—3,600.	None	Four cheese factories, employing about 3 hands in each.	Wells; soil generally gravel bottom.
Greenock A.— H.— P.—2,921.	Not supplied	Two cheese factories, 4 hands.	Wells; soil and sub-soil varies from quicksand to heavy clay.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act). How licensed and regulated.
None	None	....	....	None.
....	All slaughterhouses having licenses were cancelled.	Householder	....	None.
....	Two	....	....	....
....	None	Householder	Dry earth closets	....
Not known; no; none.	Two or three; none licensed.	Householder	....	None.
Have no means of knowing, every farmer keeps a few; no inspection.	Three, well isolated, no license given; open drains; offal fed to hogs.	No control exercised in this matter by either council or board of health.	Farmer usually applies it on their land.	None.
No	None	None	....	None.
....	None	Cannot say	Cannot say	None.
Cows very numerous; no inspection.	No licensed slaughter-houses.	No special means	None	....
About 1,000; no inspection.	One; licensed; drained into a creek; offal generally buried and some fed to hogs.	Householder	Dry earth closets; no contract removal.	None.
Cannot estimate number in township; no inspection.	Four; licensed; drained into a running stream; offal fed to hogs.	By householder	No sewerage system.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Grimsby South .... A.— H.— P.—1,457.	M. P. Henning, M.D.; D. Huntsman, sanitary inspector.	Inspection was confined to the village of Smithville, except in cases of complaint.	Scarlatina, 1 case. ......
Gwillimbury East .... A.— H.- P.—3,242.	S. Vanvetor, sanitary inspector.	Upon knowledge of infectious diseases.	Scarlatina, 8; diphtheria, 13; typhoid, 6; 2 deaths.
Gwillimbury North......... A.— H.— P.—1,729.	None	....	Scarlatina, 1; diphtheria, 11; typhoid, 2.
Guelph Township........... A.— H.— P.—2,207.	Capt. Clark, sanitary inspector.	....	No dangerous contagious diseases, and so far we are free from any outbreaks of diphtheria. In this connection we notice, with pleasure, that the anti-toxine treatment of this disease promises good results.
Hagerty, Sherwood, Richards, Jones and Burns. A.— H.— P.—1,976.	J. Channonhouse, M. H. O.	When sickness is reported inspection is made.	Scarlatina, 20 houses; about 50 children; diphtheria, 4 cases; 2 deaths.
Hagerman .... A.— H.— P.—474.	No report for this township.	....	....
Hawkesbury West.......... A.— H.— P.—	D. J. McIntosh, M. H. O.; John D. Campbell, sanitary inspector.	....	The township has been very free from contagious diseases for the greater part of the year. Scarlet fever 10 cases, in no case did the disease spread beyond the family affected, and all recovered; 3 cases of typhoid fever, none of which proved fatal; at one time it was thought smallpox would make its appearance, but fortunately it did not come; a goodly number were vaccinated.
Howe Island .... A.— H.— P.—2,485.	....	....	No sickness of any account in this township during the year, with the exception of two cases of typhoid, all recovered.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Houses placarded, no hospital.	No ; none reported as vaccinated.	Not informed.......	Seven ; 8..........	....
No hospital, isolation under instructions of physicians.	No ; about 600	Thorough cleaning up using lime and burning sulphur.	Fifteen ; 2 of these have 2 rooms each, the balance 1 room; have no return as to attendance.	....
Notice on premises; no hospital.	No................	As prescribed by attending physician.	Seven ; 1 room ; unable to give attendance.	....
....	....	....	....	....
Houses isolated, no hospital.	No ; 720 of school age.	Physician or sanitary inspector attends with plenty of disinfectants.	Eight ; 1 or 2 rooms in each school ; attendance in one school 60, the others 25.	400 in some, 100 in others.
....	A considerable amount of vaccination has been done.	....	....	....
....	....	....	....	....
....	The M. H. O. visited the schools in the island last July, and by order of the board vaccinated all children.	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used give character of soil and subsoil.
Grimsby South A.— H.— P.—1,457.	No; no	None	Generally from wells; clay loam, clay sub-soil.
Gwillimbury East A.— H.— P.—3,242.	No forms	One woollen factory, about 10 employees.	Wells
Gwillimbury North A.— H.— P.—1,729.	Nones	None	Excellent spring water wells; soil heavy, clay bottom.
Guelph Township A.— H.— P.—2,207.			
Hagerty, Sherwood, Richards, Jones and Burns. A.— H.— P.—1,976.	None	None	Spring water, some wells; clay and hard pan rock in bottom.
Hagerman A. H.— P.—474.			
Hawkesbury West A.— H.— P.—			
Howe Island A.— H.— P.—2,485.			

TOWNSHIPS.—*Continued.*

No. of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil, whether by contract or only by householder.	Sewage. How disposed of, whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
No cows kept specially for dairy purposes.	No slaughterhouses.	By householder.	No system of sewerage.	None.
No dairies...	Six ; no licenses ; inspection made.	Householder........	....	None.
Quite a number of cows are kept; milk sent to cheese factories; no inspection.	One................	Householder.... ..	....	None.
....	....	....	....	....
None	None	Householder........	Dry earth closets; attended to by owners.	None.
....	....	....	....	....
....	....	....	....	....
....	....	....	. ...	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Howick A.— H. P.—4,325.	A. M. Spence, M. H. O.		In the month of March we had an outbreak of malignant scarlet fever; cases occurred in 6 families in a radius of 4 miles, 11 persons were attacked and 3 deaths resulted. We had 2 cases of diphtheria, both recovered.
Hainsworth North A.— H.— P.—194.	J. B. Carruthers, M.D.; R. W. Graham, sanitary inspector.	House to house visitation.	Diphtheria, 16 cases.
Hainsworth South A.— H.— P.—1,110.	J. A. Porter, M.D.; R. C. McNee, sanitary inspector.	House to house inspection of premises, privies, wells, etc., in all villages, and in all other places when infectious diseases exist.	Diphtheria, 8 cases; typhoid, 2 cases.
Hallowell A.— H.— P.—2,857.	Dr. Knight, M. H. O.	Inspection well done	None
Hamilton Township A.—61,930. H.— P.—4,030.	None	The members of the board have each a district to look after. Examine schools in spring, water pumped out of wells, etc.	Diphtheria, 3 cases; typhoid, 1 case.
Harvey A.—4,680. H.—290. P.—1,013.	C. E. Bonnell, M.D., M. H.O.	Inspections made by M. H.O.; houses where contagious diseases exist are quarantined, etc.	Scarlatina, 1; diphtheria, 8; one death.
Hawkesbury East A.— H.— P.—4,783.	No M.H.O.; Urgil Pilou, sanitary inspector.	No inspection made in 1894.	Scarlatina, 10; deaths, 3; diphtheria, 8, deaths, 4.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	....	Houses were disinfected, thus preventing the further spread of the disease.	....	....
Houses quarantined.	Yes ; 160 ; about $\frac{3}{4}$ were vaccinated.	Five houses were disinfected, but how I cannot say.	Two schools ; 1 room; average attendance about 70.	....
Infected houses with all inmates are quarantined and a man provided to visit the premises, attend to the wants of the family; no other person has access to the house but the attending physician.	As nearly compulsory as possible; about 350 school children, 500 persons vaccinated in 1894, of which about 300 were school children.	All clothing, etc., are soaked in disinfectant solution and washed after the house and contents have been thoroughly fumigated with sulphur. The house is ordered to be cleaned, and when admissable whitewashed inside. Discharges, etc., are fumigated and buried in a safe place.	Six schools ; 2 with 2 rooms.	Schools are not overcrowded in any instance.
None..............	No................	None	Eighteen ; 19.......	....
Houses placarded, and all precautions taken to prevent communication; disinfectants used and houses cleaned.	Yes ; about 1,100 ; 1,000 residents vaccinated, 95 per cent. successfully.	A plentiful use of carbolic acid and chloride of lime. Linen saturated with carbolic acid hung at the entrance, etc.	Eighteen ; average attendance 60.	Don't know ......
In their private homes; no hospital.	No ; none..........	Premises are thoroughly fumigated with sulphur ; bedding and clothing disinfected with mercury chloride.	7 ; 1 ; average attendance about 25 in each school.	....
....	No ; 1,750 ; 100 vaccinated.	Left to the attending physician.	24 ; about 45 in attendance.	216 cubic feet ......

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Watersupply. Where wells are used, give character of soil and sub-soil.
Howick A.— H.— P.—4,325.	....	....	....
Hainsworth North A.— H.— P.—194.	None	Four factories and saw-mills, employing 262 hands.	Springs, rivers and lakes; rock principally.
Hainsworth South A.— H.— P.—1,110.	None	No factories except saw-mills, of which there are 6, employing about 7 hands each.	Wells and natural springs; clay and gravel.
Hallowell A.— H.— P.—2,857.	....	None	Good water supply
Hamilton Township A.—61,930. H.— P.—4,030.	Not supplied	None	....
Harvey A.—4,680. H.—290. P.—1,013.	M. H. O. only	One cheese factory, 3 hands; 2 saw and shingle factories, 20 hands.	Sandy clay loam; sub-soil mostly clay.
Hawkesbury East A.— H.— P.—4,783.	M.H.O. supplied; do not make use of them.	16 cheese factories, 2 men in each; 1 saw and grist mill, 4 men; 4 carriage shops, 4 men in each; 10 carpenter shops, 2 in each; 2 cabinet shops, 2 in each.	Ottawa river and from wells; soil clay loam and gravel; sub-soil clay and gravel.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
......	......	......	......	......
About 45.	None	Householder	......	......
No inspection; do not know number.	Two; offal fed to pigs; drained as a rule into running streams.	Householder	......	......
About 460; no; none.	Three; none licensed; not well looked after; offal fed to hogs.	Householder	......	None.
1st, cannot tell; 2nd, no; 3rd, no.	Two; 2; buried and burnt.	Householder	......	None.
About 200; no inspection.	None; two years ago there was one complaint made against it and the board of health had it removed.	Householders	Privies and earth closets; householder disposes of contents.	None.
3,282; no inspection.	Four; none licensed; well drained; offal buried or burned.	Putting it on the fields.	......	None but slaughter-houses.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Hibbert .... A.—41,500. H.—600. P.—2,275.	A. D. Nasmith, M.D, M. H. O.	Inspected schools and slaughterhouses.	Scarlatina, a few cases; diphtheria, some mild cases; typhoid, several cases, but no particulars.
Hillier .... A.—31,500. H.— P.—1,618.	T. S. Philip, M.H.O.; I. B. Ruttan, sanitary inspector.	No general inspection...	None ....
Hinchinbrook .... A.— H.— P.—1,228.	Dr. Lochaid, M.H.O....	None	None ....
Harwich .... A.—87,000. H.— P.—5,000.	J. McCully, M.D., M.H.O.	Cases are attended to as they come up.	Scarlatina was very prevalent in south part of township.
Hope .... A.—63,000. H.— P.—400.	A. Beatty, M.D., M.H.O.; John McElroy, sanitary inspector.	Slaughterhouses and cheese factories inspected.	....
Houghton .... A.—33,746. H— P.—1,910.	None	None	None .. ..
Howard..... .... A.— H.— P.—3,549.	T. L. McRitchie, M.D., M.H.O.; H. Arnold, sanitary inspector.	No complaints have been made, consequently no general inspection.	Scarlatina, 3 cases; typhoid, 3 cases.
Howland .... A.— H.— P.—856.	None	....	Diphtheria, 4 cases .....
Hullett .... A.— H.— P.—2,945.	O. Young, M.D., M.H.O.	....	Typhoid, 1 case ....
Humberston............... A.—30,877. H.— P.—2,581.	M. F. Haney, M.D.; Elias Augustine, sanitary inspector.	Inspector visits points likely to be neglected.	Diphtheria, 1 case ......

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
No isolation hospital.	No; has been general during the year.	Disinfection and isolation in the homes.	....	....
No hospital	No; don't know....	....	14..........	....
....	No	....	9; 9	....
No isolation hospital.	No; do not know ..	Had no cases	....	....
1893; smallpox cases properly isolated by placing guard on premises for six weeks.	Children between 5 to 21, 1,134; 8 to 14, 476; 16 to 21, 261.	....	18; 18; cannot give any more information; inspector of schools can give the attendance.	....
No isolation hospital.	No	Not carried out.....	11; 1 in each	....
No isolation hospital.	Vaccination made compulsory, but the law was simply ignored; much opposition was made when trying to enforce it; 239 successfully vaccinated.	Not called as M.H.O., nor were details given to me.	14; 600; all schools except 2 have one room.	....
No isolation hospital; houses placarded and watch appointed to prevent ingress or egress only by authorized persons.	....	....	....	....
....	No; none	....	11..........	....
No isolation hospital, patients confined to their room; only nurses have access. Free ventilation with daily disinfection.	No; about 360; vaccinated 325 children.	Sulphur burned in the rooms daily; more or less spraying with disinfectants such as carbolic acid, turpentine in hot water, and other similar agents.	9; 11; average attendance, 37 to each.	263 cubic feet ......

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Hibbert A.—41,500. H.—600. P.—2,275.	None		Clay loam and limestone bottom.
Hillier A.—1,500. H.— P.—1,618.	No	None	Clay, gravel and rock
Hinchinbrook A.— H.— P.—1,228.	No forms	Cheese factories only	Sandy loam is general character of soil.
Harwich A.—87,000. H.— P.—5,000.	M.H.O. only	Cannot give necessary information.	Don't know
Hope A.—63,000. H.— P.—400.		Two cheese factories, 1 woollen factory; cheese factories have 2 employees in each and woollen factory 20.	
Houghton A.—33,746. H.— P.—1,910.	No	Two cheese factories, 5 saw mills.	Wells: sandy soil; quick sand sub-soil.
Howard A.— H.— P.—3,549.	None supplied		A great many artesian wells, a goodly number flowing from the rock; sandy, gravel or clay loam; sub-soil, clay.
Howland A.— H.— P.—856.			
Hullett A.— H.— P.—2,945.	No	Two butter and cheese factories, 2 hands in each.	
Humberston A.—30,877. H.— P.—2,581.	M.H.O	Five: silver factory, carriage factory, 2 cabinet factories, 1 wagon factory, 1 cheese factory, employing respectively 40, 6, 4, 2, 2.	Wells; most of the soil is loam, balance clay on gravelly soil.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
	Two	By householder	Pits are general	None.
Don't know ; no ; no.	None	Householder		None.
Don't know ; no ; no.	None	Householders	No sewerage, natural drainage.	None.
Not know ; no inspection.		Householder		
No statistics ; no inspection ; no tuberculosis reported.				
	None	Householder		None.
No inspection: tuberculosis has been exceedingly prevalent during the year, hence action should be taken to prevent ravages.	Three			
	One	Householder		None.
About 12 cows for supplying those who need it ; M.H.O. gives the matter some attention.	Three slaughterhouses ; offal is either buried or burned ; they are kept in a sanitary condition.	By householder	Dry earth closets for the most part ; no contract removal.	Three butcher shops and 1 house for storing hides are licensed.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Hungerford A.— H.— P.—4,634.	None	None	None
Innisfil A.— H.— P.—3,582.	A. T. Little, M. H. O.; H. Sloan, sanitary inspector.	Schools inspected once a year; inspection of other buildings when complaint is made.	Scarlatina, 22 cases, 3 deaths; diphtheria, 7 cases.
Jocelyn A.—15,347. H.—87. P.—341.			Diphtheria, 1 case
Joly A.— H.— P.—227.	None	None	
Kennebec A.— H.— P.—1,255.		Instructions were given to all parties to clean up their premises.	Township has been free from contagious diseases.
Keppel A.— H.— P.—3,548.			A few cases of scarlatina existed during the year.
Kincardine A.— H.— P.—3,073.	Dr. Bradley, M.H.O.; L. Shewfelt, sanitary inspector.	Inspection done by M.H.O.	Typhoid, 15 cases reported.
Kingston A.— H.— P.—2,486.	None		
Kinloss A.—54,665. H.— P.—2,548.	John S. Tennant, M.D. M.H.O.	No general inspection; each member of the board takes cognizance of any cases that may occur.	Typhoid, 1 case
Laird A.— H.— P.—236.	None	None	None
Lavant A.—64,000. H.—111. P.—605.	Dr. Kilborne, M.H.O.	No inspection	None

TOWNSHIPS.—*Continued*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools: Number of rooms and attendance in each.	Average cubic air space to each pupil.
None	No	None	22; nearly all have one room.	Don't know
No hospital; houses strictly quarantined.	No; no cases of vaccination reported.	Sulphur fumigation, turpentine and carbolic acid, washing walls, etc., with bichloride of mercury solution 1 to 1,000.	12 or 14	Don't know
In their homes; no hospital.	No; 50; none	Disinfected by attending physician.	2; 1	
	No		2; 1; each attendance, 23 and 26.	
	General vaccination was performed during the year, 800 being vaccinated under the age of 21.			
None	No; 815; none vaccinated.	Houses placarded	18	
No hospital	No		18	
Placarding houses	No; 1,235	Cannot tell	10; generally one room to each, about 60 is the average attendance.	
No	No; none		2; 1 in each	
	No; 239 between 5 and 21; can't say how many vaccinated.		5; 1 room each	

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Hungerford .... A.— H.— P.—4,634.	No	Eleven cheese factories, about three in each.	Wells ....
Innisfil .... A.— H.— P.—3,582.	Form No. 1 as set forth in statute for report of infectious diseases.	....	Wells ....
Jocelyn .... A.—15,347. H.—87. P.—341.	No ; no	....	....
Joly .... A.— H.— P.—227.	....	None	Soil sandy loam ; subsoil gravel.
Kennebec .... A.— H.— P.—1,255.	....	....	....
Keppel .... A.— H.— P.—3,548.	....	....	....
Kincardine .... A.— H.— P.—3,073.	....	Five cheese factories, 2 in each.	Principally spring water.
Kingston .... A.— H.— P.—2,486.	No forms	Cheese factories only....	Clay ; sand ; water considered good.
Kinloss .... A.—54,665. H.— P.—2,548.	....	....	Wells and springs ; sandy and clay loam ; subsoil gravel.
Laird .... A.— H.— P.—236.	....	....	Plenty of good water....
Lavant .... A.—64,000. H.—111. P.—605.	....	None	Spring water ....

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number, and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
About 3,000 ; no ; no.	....	....	....	....
Do not know number of cows ; no inspection.	Two ; not licensed..	....	....	....
....	....	....	....	....
277 cattle	None	....	....	....
....	....	....	....	....
....	....	....	....	....
2,000 ; no	Three	Householder........	Dry earth closets ; no contract.	None.
5,599 cattle, two-thirds of which are dairy cows ; no inspection.	A few ; none licensed.	Put on land by householder.	....	....
No examination	None	No regular method..	....	....
No inspection ; no examination.	Not any..........	....	....	....
....	None	Householder.......	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Leeds and Lansdowne, Front A.— H.— P.—2,911.	J. M. Shaw, M. D., M. H. O.; Wm. McConnell, sanitary inspector.	The inspector has not been out on a complaint this year; everything is strictly looked after.	None.
Leeds and Lansdowne, Rear. A.— H.— P.—2,145.	R. J. Gardener, M. D., M.H.O.	No general inspection...	No; none vaccinated ...
Laxton, Digby and Longford. A.— H.— P.—729.	Dr. Broad, M.H.O.		None.
Lobo A.— H.— P.—2,775.	P. S. Graham, M.D., M. H.O.		Scarlatina, 2 or 3 cases, very mild.
Logan Tp A.— H.— P.—2,725.	A. D. Smith, M.D, M. H.O.		Early in the year diphtheria was epidemic in a mild form in certain sections; every effort was made to isolate sick persons; about 70 cases with 5 deaths; 2 cases of typhoid have occurred.
London Tp A.— H.— P.—8,652,		The board inspected the pork factory and found it clean and well kept; the manager was complying with previous instructions in regard to filtration.	
Luther, E. A.— H.—600. P—2,091.	A. C. Gaveller, M. D.: John McDonald, sanitary inspector.	Village portion carefully inspected; none in rural parts.	Scarlatina, 14 cases, one death; typhoid, 14 cases.
Luther, West A.— H.— P.—1,966.	A. E. Clendennan, M.D., M.H.O.	The township is divided into 5 sections, and one member of the board is alotted to each district; inspection is made when complaints are received.	Scarlatina, 4 cases; diphtheria, 2 cases.
Macaulay A.— H.— P.—	S. Bridgland, M.D., M. H.O.		Diphtheria, 2 cases; typhoid, 2 cases.
Machar A.—50,000. H.—150. P.—680.	R. D. Alway, M.D., M. H.O.		None.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
None	No	Not necessary	20	
No isolation hospital	No ; none vaccinated	None	Don't know	
Isolated by order M. H.O. ; no hospital.	No		6 ; 1 room	
	No	Rooms thoroughly disinfected.	10	
	No ; an effort was made to have the children vaccinated; about 150 to 175 were vaccinated.			
By placarding houses	Not compulsory ; 6 children vaccinated.	Principally boiling clothes, washing ceilings with quicklime ; burning sulphur, etc.	9 ; 8 have one room and 1 has 4 rooms.	
By placarding	No	Only as advised by attending physician.		
	No	Houses disinfected by burning sulphur, washing and general cleanliness.	8 ; 8 ; cannot give number of attendance.	Can't say
None	As far as known all school children have been vaccinated.	None	6; 7; attendance from 10 to 40 in a room.	Largely in excess of that required by school regulations.

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Leeds and Lansdowne, Front A.— H.— P.—2,911.	No	None	Wells ; clay loam ......
Leeds and Lansdowne, Rear. A.— H.— P.—2,145.	No ; no	1 cheese factory, 5 employees ; 4 sawmills, 18 hands ; 2 flour mills, 5 hands.	Wells ; soil, light loam and sand; sub-soil, blue clay.
Laxton, Digby and Longford. A.— H.— P.—729.	Secy. local board health notifies M.H.O.	1 sawmill, 4 hands	Wells ; limestone ......
Lobo .... A.— H.— P.—2,775.	....	....	....
Logan Tp .... A.— H.— P.—2,725.	....	....	.. ..
London Tp .... A.— H.— P.—8,652.	....	....	....
Luther, E .... A.— H.—600. P.—2,091.	None supplied..........	None	All wells ; clay and gravel.
Luther, West .... A.— H.— P.—1,966.	None	....	Wells ; soil varies .... .
Macaulay .... A.— H.— P.—	... .	Don't know	....
Machar .... A.—50,000. H.—150. P.—680.	None	Sawmills only	Wells ; soil varies in township.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
....	4; no license	By householder.....	Drawn away........	None.
Do not know the number; no examination for tuberculosis.	No regular slaughterhouse.	Householder........	Pits	....
....	None	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
No regular dairy; no inspection.	One; not drained; offal fed to hogs.	Householder........	Thrown on ground surface.	....
Not known; no inspection; no examination.	None	Householder........	....	None.
....	....	Householder........	....	....
About 800 cattle; probably 500 to 600 dairy cows.	None	Used as manure	None	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Madoc A.— H.— P.—2,475.	H. H. Sutton, M.D., M.H.O.	....	....
Malahide A.— H.— P.—3,715.	C. Sinclair, M.D.; Asa Miller, sanitary inspector.	No general inspection; inspection upon specific complaints.	None reported.........
Malden A.— H.— P.—1,512.	None........	If any complaints are made we employ a physician to investigate.	None..................
Mara A.— H.— P.—2,805.	Wm. Gilpin, M.D., M.H.O.	No regular method......	Scarlet fever, 2 cases ....
Maidstone A.— H.— P.—2,753.	R. Rourke, M.D., M.H.O.	....	General health of township has been excellent during the year 1894; several cases of diphtheria of mild type occurred, one death; scarlet fever has not prevailed to the same extent in this township as in some adjoining ones; only 2 cases came under my notice.
Middleton A.— H.— P.—3,226.	J. W. Renwick, M.H.O.	Complaints were made that the dead bodies of some animals were left unburied, and the board took active measures to have the nuisance disposed of.	The sanitary condition of township has been good; no contagious diseases have been brought under the notice of the board.
Maryborough A.— H.— P.—1,325.	J. F. Cassidy, M.H.O ..	....	4 cases of typhoid in a mild form, all recovered; 3 cases of diphtheria occurred in a malignant form, one death reported; the usual precautions were adopted, and the disease confined to one family.
Mariposa A.— H.— P.—3,861.	A. E. Vrooman, M.D., M.H.O.	Inspection of all houses and schools.	Scarlatina, 2 cases; diphtheria, 9 cases, 3 deaths; typhoid, 8 cases.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
			14; 14	
None	No; do not know	Such as may be directed by attending physician in any case.	Don't know	
None	No; none		6; 1 room each	Don't know
Patients or inmates all compelled to remain at home until M. H. O. allows them to mingle with others.	No; none vaccinated	No particular method	11; 1 in each	
	Vaccination was not carried out to any great extent.			
	Some 400 children were vaccinated, and in no case was any serious results noticed.			
Houses placarded, public excluded and patients kept in separate room and all members of family excluded until after articles of furniture, wardrobe, etc., are disinfected.	No	Rooms are generally disinfected by closing up and burning large quantities of sulphur; walls, floor, etc., are washed with a solution of hyd. bichloride 1-2,000; clothes are well boiled, having in it chloride of lime.	19	

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Madoc A.— H.— P.—2,475.		8 factories ; 3 in each	
Malahide A.— H.— P.—3,715.	None	None	Wells
Malden A.— H.— P.—1,512.			
Mara A.— H.— P.—2,805.	We have a form in our by-law not used ; no need of it ; no ; no.	None	Clay ; gravel, and in some instances rock to be drilled before water is obtained.
Maidstone A.— H.— P.—2,753.			
Middleton A.— H.— P.—3,226.			
Maryborough A.— H.— P.—1,325.			
Mariposa A.— H.— P.—3,861.	Yes	None	Wells ; water comes through limestone rock.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
Don't know; no examination.				
No; none	None reported	No special method	None	
None; no	None			
No dairies	None	By householder	No regular arrangement.	None.
	None	Householder	Chiefly by privy pits.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Marysburg South A.— H.— P.—1,513.	H. Bredin and S. Nash, M.H.O's.	No general inspection; inspection is made when complaints come in.	Scarlatina, about 30 cases; no deaths.
McKillop A.— H.— P.—2,501.	....	Board of health notifies all schools to clean premises.	Diphtheria, 1 case
McLean and Ridout A.— H.— P.—683.	No M.H.O.	As prescribed by Public Health Act.	Typhoid, 2 cases
McMurrich A.— H.— P.—634.	Dr. Barber; Geo. Copeland, sanitary inspector.	Visiting the premises	None
Medonte A.—64,000. H.— P.—3,391.	J. A. Harvie, M.D.; A. W. Heaslop, M. D.; Jas. Martin and Wm. Moffitt, sanitary inspectors.	....	Diphtheria, 8 cases
Medora and Wood A.—23,000. H.— P.—856.	None appointed	One or two members of the board inspect occasionally.	Diphtheria, 6 cases; 2 deaths.
Melancthon A.—74,000. H.— P.—3,300.	Jas. H. Reid, M. D.; Wm. August, sanitary inspector.	General inspection thoroughly efficient.	Diphtheria, 12 cases
Metcalfe A.— H.— P.—1,642.	A. Nixon, M. D.; John Taylor, sanitary inspector.	M. H. O. attends only when nuisances exist; sanitary inspector visits two or three times all schools, privies, and cheese factories, etc.	None
Minden A.— H.— P.—1,146.	Chas. D. Curry, M.D., M.H.O.	No general inspection	Diphtheria, 1 case; 1 death.
Minto A.— H.— P.—3,183.	W. A. Harvey, M.D., M.H.O.	Schools have been inspected by M. H. O.	Diphtheria, 3 cases, 3 deaths.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Each one takes care of their own ; no isolation hospital.	No ; 359 ; none ; vaccination was offered free but was not accepted.	Washing with carbolic acid; 1 school was closed for 3 weeks.	8	
No methods	No ; several were vaccinated.	None	15 ; 1 room each	Cannot say
Infected house is isolated.	No ; none	As prescribed by Public Health Act.	2 ; 1 room in each ; attendance about 45.	176 cubic feet
No particular method of isolation.	Yes ; 79 vaccinated in 1894.	None	6 ; 1 in each	230 cubic feet in No. 1 ; the balance have larger space.
No hospital	No ; none in school vaccinated.	Schools closed when any contagious diseases exist ; patients not allowed to leave their own premises.	11 ; 1 room in each with two exceptions.	
Confined to house ; no hospital.	No ; about 150		8 ; 4 more to be built in 1895 ; one room in each.	
Isolation in private houses has been carried out efficiently.	No	Disinfection has been carried out in all cases.	12 schools ; 1 room ; No. 1, 93 ; 2, 39 ; 3, 20 ; 4, 20 ; 5, 47 ; 6, 24 ; 7, 17 ; 8, 31 ; 9, 35 ; 10, 28 ; 11, 35 ; 12, 28.	No. 1, 219 ; 2, 260 ; 3, 250 ; 4, 655 ; 5, 278 ; 6, 620 ; 7, 550 ; 8, 560 ; 9, 544 ; 10, 239 ; 11, 308 ; 12, 500.
	No		8 ; 9	
No isolation hospital.	No ; M. H. O. took the ground that it was not advisable ; notice was put in newspapers advising general vaccination ; not more than 7 or 8 complied.	Under M. H. O. instructions.	Don't know	
None except precautionary means.	Yes ; 721 ; 356 vaccinated.	Physicians in attendance use disinfectants.	13, 1 in each ; about 30 average attendance.	

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub soil.
Marysburg South A.— H.— P.—1,513.	None ; no ; no	3 ; 2 employees in each	Wells ; gravel ; water is bad ; tops of wells in bad condition, as surface water gets in.
McKillop A.— H.— P.—2,501.	Cannot say	None	Wells ; clay surface and gravel sub soil.
McLean and Ridout P.—683.	No forms	One sawmill, 3 hands	Wells ; soil, sandy loam; sub-soil, hard pan.
McMurrich A.— H.— P.—634.	None supplied	None	Wells ; sandy loam
Medonte A.—64,000. H.— P.—3,391.	Yes ; yes	None	Wells and springs; sandy loam.
Medora and Wood A.—23,000. H.— P.—856.	No forms	Only sawmills	Lakes ; springs, and about 3 wells in municipality.
Melancthon A.—74,000. H.— P.—3,300.	No	1 carding factory, 5 hands; 2 planing mills, 5 or 6 hands ; 2 grist mills, 4 hands ; 6 sawmills, 30 hands.	In some parts clay loam; sub-soil, gravel and clay.
Metcalfe A.— H.— P.—1,642.	No	2 cheese factories	Wells
Minden A.— H.— P.—1,146.	No forms	None, except one cheese factory.	Wells and springs ; sandy loam ; sand or gravel.
Minto A.— H.— P.—3,183.	Supplied to all physicians.	No, except two cheese factories.	Wells ; clay loam, with clay sub-soil.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
Cannot say; no; none	One ; no license	Dumped out by householder.	No dry earth closets; no contract.	Hides and skins are kept in storehouse.
Cannot tell ; no ; no examination.	One ; offal is fed to hogs.	....	....	....
Don't know ; none..	One ; licensed ; fed to hogs.	Partly by contract, partly by householder.	....	One; storage of hides neither licensed nor regulated.
About 300 cows in municipality ; no tuberculosis ; no inspection.	None	Householder........	No sewerage system; no contract removal.	None ....
About 600 ; no examination for tuberculosis.	None licensed; drained generally into rivers and streams.	Householder.... ...	Dry earth closets ; no contract removal.	None ....
Cannot say ; no inspection.	One ; offal buried ..	Buried	....	None ....
Don't know ; no ; tuberculosis not known.	3 ; built in compliance with Health Act ; offal is used as fertilizer on farms.	By householder	It is in great demand by farmers.	None ....
About 1,200 to 1,400; no ; none	None	Householder........	....	None ....
Dairy cows are small in number; kept by farmers, say from 2 to 10 ; no inspection.	None	Householder........	....	None ....
About 2,000 ; no....	4 ; 4 licensed ; all isolated on back part of farms ; offal put on land.	No provisions made.	....	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Monaghan South A.— H.— P.—1,050.	Dr. McKinnon, M.H.O.	House to house inspection by board.	Diphtheria, 10 cases
Monaghan North A.—49,777. H.— P.—2,900.	A. E. Telland, M.D., James M. Davidson, sanitary inspector.	No inspection	
Mornington A.— H.— P.—3,081.	Jas. Johnson, M. D., M.H.O.	Board of health and M. H. O. inspect.	Diphtheria, quite a number of cases, 2 deaths; typhoid, 1 case, 1 death. Quite a few cases of typhus malaria.
Morrison A.— H.— P.—733.	W. F. Show, M.D., M. H.O.		Scarlatina, 3 cases
Mosa A.— H.— P.—2,565.	J. Walker, M.D., M.H.O.		Typhoid, 2 cases
Moulton A.— H.— P.—1,649.	M. Hopkins, M.D., M. H.O.	Township is divided into four districts and one member of board appointed to look after each district. Visits are made when necessary.	Typhoid, 1 case
Murray A.— H.— P.—2,966.	P. J. Clune, M.D.; M. W. Rutton, sanitary inspector.	The methods of inspection are extremely crude.	Scarlatina, 30 cases, 2 deaths; diphtheria, 15 cases, 1 death.
Muskoka A.—55,000. H.—200. P.—650.	A. P. Cornell, M.D.; J. Parke, sanitary inspector.	Inspection whenever cause exists.	None
Mulmur A.— H.— P.—2,723.	R. L. Island, M.D., M. H.O.		None reported
Nassagaweya A.— H.— P.—2,669.	C. E. Flatt, M.D., M. H.O.	Nil	Diphtheria, 10 cases, 1 death.

TOWNSHIPS —*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality, and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms, and attendance in each.	Average cubic air space to each pupil.
None	No; 122 between 8 and 14 years; physicians say a large number were vaccinated.	By having all excreta and expectoration with strong lime and buried; fumigation, etc., performed.	5, 1 room in each; average attendance 35.	No. 1, 251; 2, 220; 3, 473; 4, 310; 5 275.
......	......	......	4......	......
Been attended to as well as possible in a rural district. no isolation hospital.	Been insisted on by board of health; cannot give number of cases as parties vaccinate themselves.	This has been attended to by medical practitioners in attendance.	14; 14; cannot give attendance.	School inspector may be able to give this information.
......	......	......	5; 1; 2 will average about 30, the others 12.	......
......	......	......	......	......
Houses placarded and schools closed; no hospital.	No	None	7; 1	Not known to board.
Methods of isolation are such only as can be employed in private houses.	No; none	Board of health insists on employment of usual disinfectants in contagious diseases, both during the cure and after death or recovery.	14	......
No hospital	Not compulsory	No case	5; 1; attendance up to 20.	......
One family isolated from others; no hospital.	No	Disinfection and isolation.	18	......
Best that can be obtained in house; no hospital.	No; none	Practically none, except after diphtheria, when fumigation with sulphur is used.	9; 9; average attendance in each about 40.	......

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used give character of soil and sub-soil.
Monaghan South A.— H.— P.—1,050.	No	1 cheese factory	Wells; springs; clay loam.
Monaghan North A.—49,777. H.— P.—2,900.	No; no	None	
Mornington A.— H.— P.—3,081.	Not generally supplied	2 cheese factories, 3 hands in each; 1 flax mill, 15 hands.	Wells; clay
Morrison A.— H.— P.—733.		None	Wells
Mosa A.— H.— P.—2,565.		None	All kinds
Moulton A.— H.— P.—1,649.	None	None	Wells; sand and clay sub-soil.
Murray A.— H— P.—2,966.	Yes; no	1 fruit evaporator, 20 employees; 4 cheese factories, 8 employees.	
Muskoka A.—55,0.0. H.—200. P.—650.	None supplied	None	Wells
Mulmur A.— H.— P.—2,723.	None	None	Wells and springs
Nassagaweya A.— H.— P.—2,669.	No such forms in use	None	Wells and springs

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See. sec. 63 Public Health Act.) How licensed and regulated?
Don't know; no examination.	None	Householder	Ordinary closets	None.
Not known; no; no.	5			
About 2,500; veterinary inspection; one herd examined by Government inspector and three animals were destroyed.	2; no license; well drained; offal burnt.	Put upon farms	Put upon farms	None.
	None	Householder		None.
		Householder		None.
Not known; no examination.	2; none licensed			
	4; 3 licensed			4 cheese factories; permits from board of health, subject to inspection.
About 700 to 1,000	2; offal eaten by pigs.	By householder	Privies	None.
Cannot state; no; none.	1; none	Householder	Some dry earth closets; no contract removal.	None.
No inspection	None licensed			

TOWNSHIPS.—*Continued.*

Municipality.	Names of M.H.O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Nissouri East A.— H.— P.—2,682.	R. E. Towle, M.D.; C. Purdy, sanitary inspector.	The whole township, as given by medical men and others.	Scarlatina, 1 case
Nepean A.— H.— P.—5,582.	J. W. Shellington, M.D., M.H.O.	All drains, wells, privies, etc., inspected once a year, and in stinking places twice a year.	Scarlatina, 14 cases; diphtheria, 2 cases, 1 death.
Nichols A.—26,000. H.— P.—1,926.	A. Pagott, M.D, M.H.O.	Board makes one annual inspection.	Typhoid, 2 cases, 1 death.
Nissouri West A.— H.— P.—2,750.	J. W. Ford, M.D.; Wm. Faircloth, sanitary inspector.	Throughout the year any nuisances have been attended to by sanitary inspector.	Typhoid, 3 cases
Nipissing A.— H.—175. P.—339.	J. A. Porter, M. D.; Frank Sloman, sanitary inspector.	....	Diphtheria, 25, 2 deaths.
Nottawasaga A.— H.— P.—4,817.	D. McAllister, M.H.O.; A. Currie, sanitary inspector.	The sanitary inspector attends to this matter in the manner prescribed in schedule A, appended to the Public Health Act.	Scarlatina, 5, 2 deaths; diphtheria 3, 1 death; typhoid, 3, 1 death.
Normanby A.— H.— P.—5,384.	P. McLean, M.H.O	Inspected every house in the village of Ayton and caused a general cleaning up; farm premises and wells ex-examined, all found clean and satisfactory; butter and cheese factories were also inspected and found kept in good order.	No contagious diseases existed during the year.
Olden A.— H.— P.—977.	Robert Flynn, sanitary inspector.	Personal	Diphtheria, 2 cases
Oneida A.— H.— P.—1,764.	Dr. Olmsted, M.H.O	No general inspection	Typhoid, 5 cases

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools; Number of rooms and attendance in each.	Average cubic air space to each pupil.
No; general method.	No; cannot give the number.	Not systematic	Don't know	....
Patients kept isolated and disinfectants used.	No; cannot state number; nor has any been vaccinated.	Patients confined to one room in upper flat; sheet hung over door and kept saturated with bromide chloride lime, solution of chloride of lime, etc.	Don't know	....
By placarding houses; no hospital.	Teachers do not allow children to attend school who are not vaccinated.	We have been very fortunate; no necessity this year.	7 schools; 7 rooms; can't say how many attends, perhaps 50.	....
No isolation required.	Vaccination has been compulsory; 175 children vaccinated.	In typhoid cases excreta, etc., are disinfected and buried.	13; 14	....
Isolate patients in their dwellings as much as possible.	No; no report as to the number vaccinated.	By burning sulphur, using chloride of lime and carbolic acid.	3 schools; 1 room...	....
Notices under section 76, Public Health Act enforced; no isolation hospital.	Not compulsory; children from 5 to 21, 1,816; from 8 to 14, 748; none vaccinated.	By the observance of the means enumerated in section 6 of the by-law appended to Health Act.	24; 4 of which have 2 rooms; as to attendance, cannot say.	Don't know ....
....	650 children were vaccinated during the year.	....	....	....
Houses placarded and guarded.	No; not this year...	Burning sulphur....	10; 1 room in each; cannot give attendance.	....
No hospital.........	No	....	Nine, 1 room in each	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Nissouri East A.— H.— P.—2,682.	Not necessary	None	Wells and springs; clay and gravel.
Nepean A.— H.— P.—5,582.	None		
Nichols A.—26,000. H.— P.—1,926.	Yes; our average death age for 1894 is 83 years, which shows we attend to health.	No large factories	Wells and running springs; good water supplied; gravel, clay and limestone.
Nissouri West A.— H.— P.—2,750.	Yes; yes	4 cheese factories, employing 10 hands; 1 box factory, employing 12 hands.	Wells; nearly all have springs; clay soil; sub-soil sandy.
Nipissing A.— H.—175. P.—339.	None	None	Springs
Nottawasaga A.— H.— P.—4,817.	Forms are supplied, but I fear the teachers do not make use of them.	4 woollen factories; 6 grist mills; 8 saw mills; 6 hotels; 3 brick yards; employing respectively, 4, 3, 3, 1, 4.	Wells; vegetable loam; sub-soil, clay, gravel or rock.
Normanby A.— H.— P.—5,384.			
Olden A.— H.— P.—977	No	2 cheese factories, 2 men each.	Good; sand loam
Oneida A.— H.— P.—1,764.	All doctors have been supplied.	None	Mostly artesian wells

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Don't know; no; not necessary.	None...............	By householder	Dry earth closets...	None.
....	....	By contract; plowed into the soil.	Outdoor closets in the earth; contract removal.	....
None..............	None.	By householder	None	None.
About 3,000; no inspection.	3 slaughterhouses; no licenses.	Householder........	Parties attend to their own.	None.
None..............	None	....	No contract removal.	....
7,667; it is impossible to get the number of dairy cows; no inspection.	No licensed slaughterhouses in the township.	By householder	This is regulated according to rule 27 of section 14 Public Health Act.	None.
....	....	....	....	....
Have no information as to cows.	None	....	....	....
None	None	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Ops A.— H.— P.—2,480.	J. W. Poole, M.D., M.H.O.	Inspection in accordance with the Health Act.	Diphtheria, 4 cases; 1 death.
Orford A.— H — P.—2,814.	P. N. McPhail, M.D.: Dr. Davey, sanitary inspector.	....	Typhoid, 4 cases; 1 death
Orillia A.— H.— P.—3,489.	G. H. Corbett, M.H.O..	....	We have had several cases of diphtheria in the township. Scarlet fever was epidemic; most cases of a mild type.
Oro A.— H.— P.—3,791.	W. H. Clutton, M.D.; T. Drury, sanitary inspector.	Inspector visits and reports when requested. M. H. O inspects and examines well water.	Scarlatina, 27 cases, 3 deaths; diphtheria, 17 cases, 3 deaths; typhoid, 4 cases.
Osgood A.— H.— P.—4,365.	Dr. Wallace, M.H.O....	None	None reported..........
Oso A.—8,320. H.—360. P.—1,141.	H. N. Coulter, M.D.; Dr. Kilbourn, M.H.O.	Nil	Typhoid, 2 cases........
Otonabee A.— H.— P.—3,438.	John M. Show, M.D.; John Dinsdale and John Bell, sanitary inspectors.	Very fair inspection. Township divided east and west.	Scarlatina, 6 cases: diphtheria, 2 cases.
Oxford, E A.— H.— P.—1,971.	J. McLurg, M.D., M.H.O.	....	That dread disease smallpox was brought here from Chicago; by the patient being quarantined only 2 cases existed.
Oxford, N A.—21,129. H.— P.—1,381.	Dr. McWilliams, M.H.O.; Joseph Wickens, sanitary inspector.	Sanitary inspector inspects twice a year schoolhouses, slaughter-houses, etc, and oftener if required.	....

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory. State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
No isolation hospital. Patients are confined to their rooms and no admittance except the doctor and nurse.	No, but it was strongly recommended; 540 children in municipality and scarcely 5 per cent. has been vaccinated.	The doctor in attendance uses the prescribed disinfectants.	Eleven schools, 1 room in each; average attendance about 30.	400 cubic ft.........
None....	No; about 50 in township.	None of note...	Ten	Don't know... .....
....	....	....	... .	... .
No means but by separate rooms or by sending non infected cases to safe places. Rooms when diseased remain are guarded from other parts by sheets soaked in bi-chloride solution hung over doors, etc.	No	Houses are fumigated during the continuance of disease. Clothing, etc., are removed as early as possible. In diphtheria all clothing in sick room that can be burnt is so dealt with; the rest is boiled. Rooms fumigated with sulphur.	Seventeen	....
None....	No	Nothing done.......	Twenty-seven, 1 has 2 rooms	....
No	No	Simply done by attending physician.	Nine, 1 room in each	....
Placards used Diphtheria cases sent to Peterboro' hospital.	No	Burn sulphur, etc...	....	....
Patients are quarantined, etc.	....	....	....	....
None....	No; about 160......	None...............	Five schools, 1 room in each.	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Watersupply. Where wells are used, give character of soil and sub-soil.
Ops A.— H.— P.—2,480.	Nearly all supplied	One large shingle and lumber factory employing about 30 hands; 1 cheese factory.	Wells
Orford A.— H.— P.—2,814.	When necessary	None of note	Wells chiefly
Orillia A.— H.— P.—3,489.	....	....	....
Oro A.— H.— P.—3,791.	No; no	None of any consequence	Sand or gravel on clay loam. Clay sub-soil.
Osgood A.— H.— P.—4,365.	No	....	Wells
Oso A.—8,320. H.—360. P.—1,141.	Have never seen any	None	Generally spring wells and lake water.
Otonabee A.— H.— P.—3,438.	No forms	Cheese factories	Good, except Otonabee river with sewage from Peterboro'.
Oxford, E A.— H.— P.—1,971.	....	....	....
Oxford, N. A.—21,129. H.— P.—1,381.	....	Two cheese factories; 3 hands in one and 4 in the other.	Wells. Mostly clay soil, in some cases sand and gravel.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec 63 Public Health Act.) How licensed and regulated.
No dairy	Four slaughter-houses fairly well kept and drained; offal removed weekly. All butchers licensed.	In the township this gives very little trouble. Some dry earth closets.	....	....
....	Two in township ...	By householder.....	Don't know.........	None.
....	Two slaughter-houses.	....	....	....
Dairies not kept for milk supply for towns. No inspection.	Underdrained; offal is carted to farm about one-half mile from village.	Householder	Dry earth closets are mostly used.	....
No	One	No action taken	....	....
About 500. No	None..............	Householder........	....	....
....	One	....	....	None.
....	....	....	....	....
....	Three; licensed by council; offal boiled and fed; refuse buried.	Householder........	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Papineau A.—24,500. H.—125. P.—700.	No M.H.O. ; no sanitary inspector.	Inspection made by individual members of the board.	None
Pembroke A.— H.— P.—638.	None	There is none.	None
Percy A.—6,400. H.—900. P.—3,200.	J. M. Cleminson, M. H. O. ; A. N. Sanborne, sanitary inspector.	General inspection by inspector every spring, who also sees that garbage and night soil is properly disposed of.	Scarlatina, 33 cases ; typhoid, 1.
Perry A.— H.— P.—1,078.	H. L. Barber, M.D., M. H.O. ; Chas. McPhail, sanitary inspector.	No inspection	
Petewawa A.— H.— P.—815.	Dr. Joseph, M.H.O.		Diphtheria, 33 cases, 12 deaths.
Pickering A.— H.— P.—5,076.	No M.H.O.; 6 inspectors		Scarlatina, 6 cases ; diphtheria, 1 case; typhoid, 14 cases, 2 deaths.
Pilkington A.— H.— P.—1,505.	Dr. Robertson, Hugh Roberts, sanitary inspector.	The inspector inspects every schoolhouse and property twice a year.	Two cases of typhoid.
Plantagenet, N. A.— H.— P.—3,726.	N. Garboury, M. H. O. ; W. A. McKay, sanitary inspector.	Inspection on cases reported.	Scarlatina, 200 cases, deaths, 34 ; diphtheria, 25 cases, 13 deaths ; typhoid, 1 case, 1 death.
Plympton A.—75,800. H.— P.—3,590.	P. C. McG. Brown, M. H. O.	General inspection not carried out.	Typhoid, 7 cases

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
None	Vaccination has not been enforced.	Usual disinfectants in cases of diphtheria, such as sulphur, etc., largely used.	Three schools, 1 room each ; average attendance about 25.	From 175 to 200 feet
None	No, don't know.....	None	Two. Don't know..	....
No isolation hospital. Every precaution to prevent the spread of contagious diseases.	No. 1,000. Don't know how many vaccinated.	Disinfection has not been carried out very systematically. All the clothes from patients and bedclothes boiled and use disinfectants, sulphur fumes, etc.	Seventeen ; 20......	....
....	444 vaccinated, paid for by township.	....	Eight schools ; 1 room.	....
None	No. 219. None ...	None	Four ; one room	About 150 cubic feet
In dwellings usual disinfectants and dwellings placarded except in cases of typhoid.	No	In different ways just as the attending physician would recommend.	Twenty-two ; 2 rooms in 3 schools, the others have 1 in each. About 30 in each school.	Cannot give this information.
Every precaution taken. No isolation hospital.	No. 68 vaccinated in all.	....	Five; 1 room in each	....
Houses placarded ; no hospital.	No ; none....	Houses disinfected with sulphur fumes when reported.	Twenty-four........	....
No isolation hospital; patients are put in a room up-stairs and communication with outsiders forbidden.	Yes ; 190.	In cases of typhoid a solution of carbolic acid is kept in vessels, and excreta either buried or burned ; clothing and bed clothes soaked in solution of corrosive of sublimate 1-3,000 ; rooms, floors, walls and ceilings washed.	Twenty ; 1 room in each ; nearly 85 in every school section; average daily attendance would be about 25.	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Papineau. A.—24,500. H.—125. P.—700.	Forms have not been used.	None	Soil and sub-soil of a porous sandy nature.
Pembroke A.— H.— P.—638.	None supplied	One axe factory; 1 cheese factory.	Ottawa river and wells; all kinds of soil.
Percy A.—6,400. H.—900 P.—3,200.	Yes; not very systematically.	Three cheese factories	All from wells; clay loam; sub-soil a mixture of clay and gravel.
Perry A.— H.— P.—1,078.			
Petewawa A.— H.— P.—815.	Don't know	None	Principally wells; loam, sand and gravel.
Pickering A.— H.— P.—5,076.	Medical men only.	Wood turning, 10 employees; butter factory, 2 employees.	Wells; all kinds of soil.
Pilkington A.— H.— P.—1,505.	None		
Plantagenet, N. A.— H.— P.—3,726.		One woollen factory, 3 employees.	
Plympton A.—75,800. H.— P.—3,590.	None supplied	Three cheese factories, 2 employees in each.	Wells; soil, mostly clay or clay loam; sub-soil, clay.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets, etc. If so, is there contract removal?	State number and kind of noxious trades. (See sec 63 Public Health Act.) How licensed and regulated?
None	Two: not licensed; offal fed to hogs.	By householder	By householder	None.
No	One: no license	By householder	By householder	None.
Do not know: no inspection; no examination.	Two: none licensed; offal fed to pigs.	By householder, generally buried.	By drains. No earth closets. No contract for removal.	None.
....	....	....	....	....
609 cattle: no inspection.	None	Householder; taken to barn yard.	Householder	None.
A great many; no inspection; no examination.	Nine; by tile drains; offal removed daily and buried in isolated places.	In villages householders.	Buried or removed. Not many dry earth closets.	None.
....	None	By contract	....	None.
About 1,000; no; none.	None licensed; do not know.	....	....	Three; not licensed nor regulated.
No inspection	None	By householder	No provision made for disposal of sewage.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Proton A.—80,911. H.—800. P.—2,930.	Jas. McWilliams, M. H. O.	None, except by members of local board.	Scarlatina, 1 case reported.
Puslinch A.—58,513. H.— P.—3,300.	A. Munro, sanitary inspector ; no M. H. O.	Twice in each year ; inspection is made of all villages in township, all yards, wells and water closets connected therewith, all schools and slaughterhouses.	Scarlatina, 30 cases, 2 deaths ; typhoid, 11 cases, no deaths.
Radcliffe and Raglan A.— H.— P.—1,059.	No M. H. O.	....	Several cases of malarial fevers ; no contagious diseases.
Rainham A.—25,438. H.— P.—1,695.	I. Fry, M. H. O.	Not any this year.	None
Raleigh A.— H.— P.—4,634.	S. N. Young, M.D., M. H. O.	....	Scarlatina, 4 cases ; typhoid, 4 cases ; measles, 1 case.
Reach A.— H.— P.—4,122.	None ; entirely under the care of the local board of health.	Inspection made when complaints come in.	Diphtheria, 5 cases reported, although there were several cases in township not reported by physicians.
Richmond A.— H.— P.—2,579.	....	....	No contagious diseases this year in this municipality.
Rochester A.—45,463. H.— P.—2,492.	W. R. Rouke, M.D. ; Joseph Strong, sanitary inspector.	Inspection when necessary.	None
Romney A.— H.— P.—1,392.	G. Wright, M. H. O. ; Robt. Dawson and Edward Gibson, sanitary inspectors.	Two sanitary inspectors report to the board of health.	Scarlatina, a few cases ; diphtheria, several cases, one death reported ; typhoid some cases.
Russell A.— H.— P.—2,829.	F. M. Perras, M.D.; Dr. McDougall, sanitary inspector.	Only when required by ratepayers.	Scarlatina, 5 cases; typhoid, 1 case.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
None	Yes ; none reported; no cases of smallpox in township.	None required	Twelve public and 1 separate schools ; 1 room in each ; total pupils in township 1,030.	Supposed to have sufficient space.
Isolation and placarding; no hospital.	No ; about 1,180 ; 320 vaccinated.	The board simply isolates, the doctors attend to the other part.	Thirteen schools, 12 have 1 room each and one 2 rooms ; average attendance between 50 and 60.	....
....	....	....	....	....
None	None	None	Nine ; 9 ; do not know attendance.	....
Patients in each case isolated and disinfected when convalescence begun ; houses, bed clothing and wearing apparel thoroughly fumigated.	No	Chloride of lime and sulphurus acid and carbolic spray.	Seventeen; 1 in each; 1,100 children from 5 to 16.	800 cubic feet
When cases of contagious diseases are known means are at once taken to have the patients isolated.	No ; none to our knowledge.	By fumigation, and schools closed for two weeks in the locality.	Sixteen ; cannot say.	Inspector says there is over the necessary amount of cubic air space.
....	....	....	....	....
None	Yes ; 371	....	Ten schools ; average about 50.	....
No isolation	No ; 407 school children in municipality ; very few, if any, vaccinated in 1894.	No disinfection	Six	....
No hospital ; isolation at homes.	No ; 18 vaccinated	By boiling the clothes with carbolic acid in water, lime on walls when proper, carbolic acid for washing on paint.	Six in the eastern part of township ; 1 room for each school, except 1 school, which has 2.	From 120 to 148 cubic feet.

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Proton A.—80,911. H.—800. P.—2,930.	None supplied but to medicos practising in township.	Two cheese factories, 1 in each.	Wells
Puslinch A.—58,513. H.— P.—3,300.	Not yet supplying, soon will be.	None	Wells and springs; clay loam and gravel.
Radcliffe and Raglan A.— H.— P.—1,059.			
Rainham A.—25,438. H.— P.—1,695.	Not supplied	None	Wells; soil, heavy clay.
Raleigh A.— H.— P.—4,634.	No	None	Wells
Reach A.— H.— P.—4,122.	Yes, but never used		Wells; clay in most cases.
Richmond A.— H.— P.—2,579.			
Rochester A.—45,463. H.— P.—2,492.	Yes	Six; 1 cheese factory, 2 men; 3 steam mills, 50 men; 2 saw mills, 25 men.	Wells; blue clay
Romney A.— H.— P.—1,392.	Not supplied	None	Wells are mostly used; clay loam; sub-soil, clay.
Russell A.— H.— P.—2,829.			Wells clay loam

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Supposed about 600; no report of tuberculosis in township; no examination.	None in township...	Householders.......	No system of sewage, primitive open closets.	None.
....	Four; offal sometimes fed to hogs, sometimes mixed with manure and put on fields.	Drawn to the fields.	Open drains, contents of closets put on fields.	None.
....	....	....	....	....
Not known; no inspection.	One; not licensed; offal fed to pigs.	....	....	None.
No	None	Householder........	No contract	None.
....	Two; properly drained.	....	....	....
....	....	....	....	....
About 200; no examination.	Two; offal fed to hogs.	Householder........	Dry earth closets; no.	None.
None	None licensed	Householder........	No provision made..	None.
Five; 1 for butter, 4 for cheese.	Three; none licensed; offal given to pigs and dogs.	Householder.... ...	By removing the closets and covering with earth.	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Ryde A.—50,000. H.— P. 6,650.	Dr. Bridgland, M.H.O.	No inspection	Typhoid, 3 cases
Ryerson A.— H.— P.—703.	Dr. Crawford, D. Starritt, sanitary inspector.		
Saltfleet A.— H.— P.—2,609.	Leeming Carr, M.H.O.; A. C. Springfield, sanitary inspector.	Sanitary inspector inspected all wells and waterclosets in Village of Stony Creek, ordered them to be cleaned and saw it carried out.	Scarlatina, 1 case; diphtheria, 2 cases; typhoid, 3 cases; and 1 death.
Sandwich East A.—19,736. H.—500. P.—2,373.	Jos. O. Reannie, M.H.O.	Inspector diligent in his duty, makes thorough inspection; board also active.	Small; 6 cases; 2 deaths.
Sandwich South A.—23,733. H — P.—2,388.	Dr. Brien, M. H. O.; John Healey, sanitary inspector.		Diphtheria, 2 cases
Sandwich West A.— H.— P.—	Dr. L. T. Paré, M.H.O.		None
Sarawak A.— H.— P.—1,045.	No M. H. O.; J. C. Atkins and John Morton, sanitary inspectors.		Scarlatina, 1 case; diphtheria, 2, cases; typhoid, 2 cases, 1 death.
Saugeen A.— H.— P.—1,573.	H. Becker, M. H. O.	No systematic inspection.	Scarlatina, 1 reported; heard of others not reported by M.Ds.
Sault Ste. Marie A.— H.— P.—355.	H. H. Scherk, M. D. M. H. O.	Nuisances and infectious diseases inspected and reported upon when notified by board.	None
Scott Township A.— H.— P.—2,237.	W. Armstrong, M.D., M. H.O.		Some 2 or 3 cases of diphtheria, all recovered; scarlet fever ravished the eastern portion of the township before measures were taken to check it; typhoid fever was confined to a few isolated cases.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality, and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details and how carried out	Number of schools, number of rooms, and attendance in each.	Average cubic air space to each pupil.
None	No	Disinfection by burning sulphur, in washing, etc.	Four	....
....	No ; 869 ; 209 vaccinated, including adults.	....	Four ; 1	....
Diphtheria cases were sent at once to Hamilton hospital and houses thoroughly disinfected.	No	Cases were taken to Hamilton hospital and houses whitewashed, clothes and bed clothes boiled. Houses disinfected with sulphur fumes.	Ten schools, one room in each.	....
No isolation hospital, but one in prospect of erection ; patients isolated at their homes.	Yes, in schools ; 500 school children ; 477 vaccinated in 1894.	Thorough and careful disinfection by inspector under supervision of M. H. O.	Six schools, 11 rooms, averaging 45 pupils to each room.	300, except in one school in which there are 240.
Houses are placarded.	No	Carried out according to the directions of M.H.O.	Six ; 1 room in each, from 30 to 80 in attendance.	About 150
No	None	....	Nine schools	....
In houses	None	....	Four schools, 3 have 1 room and 1 has 2 rooms.	....
No epidemic during the year, and action by the board not required.	No	No action on part of board of health required.	Seven ; average attendance, 40 in each.	About 300 cubic feet.
Houses being very far apart in this district, patients can easily be isolated.	Yes ; 322 persons vaccinated.	No disinfection as yet has been required	....	....
....	....	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used give character of soil and sub-soil.
Ryde A.—50,000. H.— P.—6,650.	None	None	Wells ; clay and sand
Ryerson A.— H.— P.—703.		None	Wells and natural springs
Saltfleet A.— H.— P.—2,609.	M.H.O. is supplied. All physicians are supposed to notify M. H. O.	None	Wells ; soil mostly clay and some places gravel.
Sandwich East A.—19,736. H.—500. P.—2,373.	None	One cheese factory employing 3 or 4 men.	Detroit river, Lake St. Clair and wells ; loam and clay.
Sandwich South A.—23,733. H.— P.—2,388.	No forms supplied	None	Wells ; soil is loamy with clay sub-soil.
Sandwich West A.— H.— P.—	No	None	
Sarawak A.— H.— P.—1,045.	Yes, and are used	None	Wells and springs
Saugeen A.— H.— P.—1,573.	No forms	Two cheese factories	Wells ; clay loam, sand and gravel.
Sault Ste. Marie A.— H.— P.—355.	No forms	None	
Scott Township A.— H.— P.—2,237.			

TOWNSHIPS.—*Continued.*

No. of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
No	None	Ordinary closets	....	....
....	None	....	....	None.
No inspection ; no examination of herds.	Three ; offal has been sold and used as manure.	Householder ; all waterclosets.	No dry earth closets.	None.
400 ; no ; none......	Four ; none ; well drained and offal destroyed and privately disposed of.	Buried and otherwise destroyed by householder.	Ditches leading to Detroit river; privy pits generally used.	None.
Number of cows unknown ; no inspection ; no tuberculosis.	Four slaughter-houses ; no license ; tile drained ; offal is buried or fed to hogs.	Householder	Householder removes it.	None.
Fifty	Four	....	....	....
No dairies.........	One not licensed....	Householders.......	....	....
No examination for tuberculosis.	Three licensed ; offal mostly boiled down.	....	....	....
No inspection	....	Privy pits the usual thing, some are attended to by householder.	Being a farming community, refuse is disposed of in the manner common to the locality.	....
....	....	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Southwold A.— H.— P.—3,804.	....	Slaughterhouses, cheese-factories, dairies, etc., were inspected.	The health of the municipality up to date has been exceptionally good; there were 2 cases of diphtheria which proved fatal; one mild case of typhoid recovered.
Scugog A.—9,152. H.—168. P.—533.	Dr. Clemens, M.H.O.	No general inspection	Diphtheria, 5 cases, deaths 2; typhoid, 1 case.
Seneca A.— H.— P.—1,974.	No M. H. O.	Township is divided into districts and one member of the board appointed for each district.	Scarlatina, 1 case; diphtheria, 3 cases, 3 deaths; typhoid, 1 case.
Sherbrooke A.—4,655. H.—95. P.—405.	N. Hopkins, M.H.O.	....	....
Sidney A.— H.— P.—4,288.	J. Simmons, M.H.O.	Annual inspection	Scarlatina, 2 cases; typhoid, 3 cases.
Smith A.— H.— P.—2,646.	J. R. Fraser, M.H.O	None	Diphtheria, 28 cases, 4 deaths; typhoid, 7 cases, 1 death.
Sombra A.— H.— P.—3,781.	D. K. Stinton, M.H.O.	....	Scarlatina, 12 cases
Somerville A.—62,176. H.— P.—1,800.	J. J. Broad, M.H.O	As there is no inspector, there is only a general supervision, unless in in cases to which our attention is called.	Scarlatina, 10; diphtheria, 11, 3 deaths; typhoid, 2, 1 death.
Sophiasburg A.— H.— P.—2,107.	J. Cryan and Joshua Whitney, M.H.O's.	Sanitary condition of township excellent.	Scarlatina, 25 cases, 2 deaths.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	About 200 notices were sent out calling upon the inhabitants to attend to vaccination, but very little attention was paid to the matter; the next step will be compulsory vaccination.	....	....	....
In their homes; no hospital.	No; children between 5 and 16, 121; no report of any being vaccinated.	Disinfection has not been been taken charge of by the board of health.	3; 3; cannot give attendance.	....
Not required this year.	No; don't know; number of children in municipality, 383.	....	12; 12; attendance, 21 to 40.	....
None	No	....	Two schools, 2 rooms in 1; attendance, about 35.	256 cubic feet ......
Private isolation....	No; 1,007; none vacciuated.	Clothing burned; bedding, etc., disinfected with bichloride; houses fumigated.	16 schools, 17 rooms.	150 cubic feet ......
Houses where diseases occur are placarded.	No; about 380; none vaccinated.	....	11; one room in each.	....
Placarding houses...	Yes; vaccinated 634.	Free use of carbolic acid; thorough cleansing of rooms; burning sulphur, etc.	Sixteen	....
The infected house is isolated, placarded, etc., after which the house is thoroughly disinfected.	Yes; 300 vaccinated; don't know number of children in municipality.	Burning such articles as cannot be disinfected, washing all articles in bichloride solution; also walls, floors, fumigated with sulphur.	9; 2 of these have 2 rooms, the rest but 1.	....
Patient removed to private room and disinfectants used.	No	The instructions issued in Pamphlet No. 15, issued by Provincial Board of Health followed as far as practicable.	Fourteen; 14; cannot say.	Sanitary condition of schools is good; sufficient space.

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Southwold A.— H.— P.—3,804.			
Scugog A.—9,152. H.—168. P.—533.	No forms	None	Wells
Seneca A.— H.— P.—1,974.	No forms	2 cheese factories, 4 employees.	Wells; clay
Sherbrooke A.—4,655. H.—95. P.—405.	None supplied	None	Wells used
Sidney A— H.— P.—4,288.	Blank forms; M.H.O. not properly notified.	Deaf and Dumb Institute, near Belleville.	Wells; clay, and some gravel.
Smith A.— H.— P.—2,646.	Yes	Seven cheese factories; 2 creameries, planing factory and sash factory.	Wells; clay loam and hardpan, sub-soil, some sandy loam and gravel.
Sombra A.— H.— P.—3,781.	None	None	Wells; clay with sandy sub-soil.
Somerville A.—62,176. H.— P.—1,800.	Supplied to physicians	None	Wells; the soil is sandy with granite formations in eastern part; the remainder is heavy clay with some stone formation.
Sophiasburg A.— H.— P.—2,107.	Were not required during the year; no forms.	None except cheese factories.	Wells and springs

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed. How drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
....	....	....	....	....
None, except farm dairies; no inspection; no examination.	None	By householder	....	None.
....	Not licensed; offal buried.	By householder	....	None.
None........	None........	By householder ...	Dry earth closets....	None.
Not known; no; none.	Two licensed; properly disinfected and flushed.	....	....	....
About 4,000 cows; no inspection and no examination for tuberculosis.	Six; unlicensed	By householder	No system........	None.
Don't know; no; no examination.	None licensed.	Householder...	....	None.
No inspection.......	Two; one is isolated and the other is too close to buildings and has caused trouble.	Householder........	....	None.
No; no examination necessary.	None licensed; no regular inspection.	By householder; garbage is generally burned; privies are emptied when necessary.	....	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases
Springer A.— H.— P.—928.	None	Inspection made by chairman once a year.	Typhoid, 2 cases, 1 death
Stamford A.—21,309. H.— P.—2,016.	John Dee, M.D.; Wm. Swain, sanitary inspector.	By sanitary inspector	Diphtheria, 1 case, 1 death.
Stafford A.— H.— P.—1,044.	Dr. Rattray, M.H.O.	If complaints are made board takes action.	None
Stanhope and Sherbourne A.— H.— P.—570.	None	By local board of health.	None
Stanley A.— H.— P.—2,310.	M. Armstrong, M.D., M.H.O.		
Stephen A.— H.— P.—3,423.	Dr. T. Wickens, M.H.O.		Scarlatina, some cases; diphtheria, 4 cases; typhoid, a few cases and one death.
Stisted A.— H.—119. P.—569.			
St. Joseph A.— H.— P.—736.	H. M. Ross, M.H.O.		Diphtheria, 2 cases, 1 death.
St. Vincent A.— H.— P.—3,202.	None	None	None reported
Sullivan A.—73,166. H.—800. P.—3,426.	G. H. Cook, M. H. O.; Wm. Smith, sanitary inspector.	No general inspection; when complaint is made M.H.O. or inspector attends to the case.	Scarlatina, 3 cases
Sunnidale A.— H.— P.—2,290.	G. Hunt, M.H.O.	Not any	Scarlatina, 4 deaths

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Houses placarded; no hospital.	No	Burning of sulphur, etc.	Four schools; 1 room in 3 and 2 in one.	About 300 cubic feet.
No isolation hospital.	Yes; 600; 200 vaccinated.	Fumigated with sulphur.	High school, 9 rooms; all others 1 room each.	....
None	All children vaccinated 4 or 5 years ago; 320 in municipality.	None	Four schools; 1 room each; attendance about 40.	250 cubic feet. .....
None; none	No	Not any............	Seven; 7...........	....
....	No; M.H.O. vaccinated pupils to the number of 200.	....	....	....
No isolation hospital.	Considerable vaccination has been done.	Houses placarded...	Thirteen	....
....	No; none vaccinated	....	Six schools; 1 room in each; average attendance, 29.	....
....	176 vaccinated at schoolhouses; 348 in municipality.	Houses disinfected by carbolic acid and fumigated with burning sulphur.	Five schools; average attendance, 24.	345 cubic feet.......
Usual methods are adopted by physicians; no hospital.	Have no record of number vaccinated.	Premises placarded; physicians generally attend to the proper disinfection of houses during sickness.	Fifteen; in good sanitary condition.	....
No isolation hospital.	No; none	Fumigation by sulphur.	Fifteen schools; 1 room; average attendance, 30; 1 school, 2 rooms; average attendance, 40.	....
No hospital, but other buildings are used for isolation.	No	....	Eleven	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Springer A.— H.— P.—928.	We have no M.H.O.; no notification by teachers.	None	Wells generally; top soil is sandy, clay sub-soil.
Stamford A.—21,309. H.— P.—2,016.	To M.H.O. only	One bone mill employing 3 men.	Wells; clay and quicksand, also sand and gravel.
Stafford A.— H.— P.—1,044.	If required	None	Mostly clay with gravelly bottom.
Stanhope and Sherbourne P.—570.	None; no; no	None	Loam, on granite rock
Stanley A.— H.— P.—2,310.	...	...	...
Stephen A.— H.— P.—3,423.	...	Two cheese factories, 2 hands in each; 2 flax mills, 10 hands in each.	Sand, loam and clay
Stisted A.— H.—119. P.—569.	...	None	Sand and gravel
St. Joseph A.— H.— P.—736.	No forms supplied	...	All kinds of soil
St. Vincent A.— H.— P.—3,202.	...	...	Well water generally
Sullivan A.—73,166. H.—800. P.—3,426.	Not supplied	...	Wells; soil mostly gravel
Sunnidale A.— H.— P.—2,290.	No	...	Wells

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
None	None	Generally buried by householder.	None	None.
Sixty ; no medical or veterinary inspection.	Five ; natural drainage ; fed to pigs.	Householder	....	One bone mill licensed by council and supervised by sanitary inspector.
....	....	By householder	....	None.
None ; no ; none	None	By householder	....	None.
....	....	....	....	....
....	Three ; no license	By householder	Ordinary way	None.
....	None	....	....	None.
No dairy ; no inspection.	None	....	....	....
....	Two ; no license ; no regulations as to drainage and disposal of offal.	No system	No system	None.
Not known	One ; licensed	Householder	Dry earth system in use.	None.
No inspection ; no examination.	None	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Sydenham A.—73,195. H.— P.—3,674.	A. C. Sloan, M. H. O.; A. J. McConnell, sanitary inspector.	No general inspection; only make inspection when notified.	Scarlatina, 7; diphtheria, 16, 1 death.
Tay A.— H.— P.—3,838.	No M.H.O.; each member of the board is appointed a sanitary officer.	None except of little importance.	Scarlatina, a good many cases of very light character; not many fatal results.
Thorah A.— H.— P.—3,100.	A. Grant, M. H. O.	None	None
Thurlow A.— H.— P.—4,830.	D. W. Faulkner, M.H.O.; J. K. Makerger, sanitary inspector.	Visited a number of cheese factories and some dwellings; generally inspect when complaints are made.	A few mild cases of typhoid.
Toronto Tp A.— H.— P.—5,129.	M. Sullon, M.H.O	Any complaints made to board of health are dealt with by sanitary inspector.	Diphtheria, 7 cases and 2 deaths: typhoid, 11 cases and 3 deaths.
Tossorontio A.— H.— P.—1,376.	A. J. Hunter, M.H.O.; Thos. Irwin and John Stickles, sanitary inspector.	....	Scarlatina, 3 cases; typhoid, 3 cases, 1 death.
Townsend A.— H.— P.—2,824.	A. C. Duncomb, M.H.O.	....	Scarlatina, 1 case
Tilbury North A.— H.— P.—2,340.	A. Lemise, M.H.O	Schoolhouse inspected.	None
Tilbury East A.— H.— P.—2,648.	J. Bell, M.D., M.H.O.	Inspection made when complaints are lodged.	Cannot tell; cases not reported.
Tuckersmith A.— H.— P.—2,642.	Dr. Scott, M.D., M.H.O.	....	Diphtheria, 1; typhoid, 1.
Turnberry A.— H.— P.—2,315.	Dr. Fowler, M.H.O	Municipality is divided into five districts and each member of the board acts as inspector.	None reported

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1891.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
We have an hospital, but have never used it; isolation at home.	No	Ordinary disinfection; discharges from body are disinfected; patients dying from infectious diseases are disinfected in coffin.	Seventeen; 1 room; from 30 to 35 attendance.	....
No hospital	No	Only the ordinary means.	Eleven; 18; about 30 to 50.	....
None	Yes; necessary notice given, but none vaccinated; 325 in municipality.	....	Four; 4; attendance, 41.	400 cubic feet.......
No hospital; isolate families where there is contagious diseases.	No	Isolation; the use of carbolic acid, etc.	About 25; from 1 to 2 rooms.	....
Strict quarantine and disinfection by using sulphur fumes.	No; 345 reported as vaccinated.	....	Twenty; average attendance, 33.	....
No hospital	No; 527; 30	Apartments are thoroughly fumigated; and all clothing boiled and disinfected.	Eight; 8; about 35 daily average attendance.	350 cubic feet.......
None	No; 781	....	Seventeen schools...	Do not know ....
....	All school children were vaccinated.	None	Nine	....
Not isolated; no isolation hospital.	Yes; about 308 vaccinated.	Sulphur, chloride of lime, carbolic acid, etc.	Eleven; 11	....
....	No	....	Ten; 11	....
No method; no hospital.	No; 733; don't know how many vaccinated.	None	Twelve; 13	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Sydenham A.—73,195. H.— P.—3,674.	Teachers are supplied	None	
Tay A.— H.— P.—3,838.	None; no; no	Seven or 8 saw mills	
Thorah A.— H.— P.—3,100.	None supplied	Three; 2 brick yards and one pottery, employing about 3 hands.	Clay loam and clay sub-soil.
Thurlow A.— H.— P.—4,830.		About 12 factories, principally wood; from 3 to 5 hands in each.	Sandy loam; a great many use spring water.
Toronto Tp A.— H.— P.—5,129.	No	Woollen factory, 46 hands; glucose factory, 21 hands.	Wells or springs; clay and clay loam.
Tossorontio A.— H.— P.—1,376.	None	None	Sand and loam, with clay sub-soil.
Townsend A.— H.— P.—2,824.	No; no	None	Wells and springs
Tilbury North A.— H.— P.—2,340.	None	Two cheese factories	Lake and wells
Tilbury East A.— H.— P.—2,648.		Four stave mills employing 40 hands.	Mostly wells; soil, clay loam and blue clay.
Tuckersmith P.—2,642.			
Turnberry A.— H.— P.—2,315.	None in use	One cheese factory, employing 2 to 5 hands; 3 saw mills, employing 10 to 12 hands.	Wells; soils principally clay loam.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	None	Chiefly used for manure and disposed of by householder.	....	....
No ; none	None licensed	....	....	None.
None ; no ; no.	One ; buried	Buried by householder.	....	None.
About 7,200 ; no inspection.	None licensed ; some buried and some fed to hogs.	....	Some have dry earth closets.	....
No regular dairies except farmers.	No licensed slaughterhouses.	....	....	....
No inspection	None licensed	Householder........	No provision made in the matter.	None.
....	....	....	....	....
....	....	Householder........	....	None.
No inspection ; no examination.	None licensed ; offal generally fed to hogs.	Householder........	....	....
....	Two ; none licensed.	....	....	....
No inspection ; no examination.	None	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Trafalgar A.— H.— P.—3,775.	M. McCrimmon, M. H. O; R. Flemming, sanitary inspector.	By inspector when required.	Scarlatina, a few cases; typhoid, 6 or 7 cases.
Usborne A.— H.— P.—2,424.	J. J. Thompson, M. H. O; J. C. Tufts, sanitary inspector.	Sanitary inspector acts under board of health; no general inspection.	Scarlatina, 37 cases; diphtheria, 27 cases.
Uxbridge A.-- H.— P.—3,100.	F. Black, M.D., M.H.O.	....	Diphtheria, 2 cases, 1 death.
Vespra A.— H.— P.—2,700.	No M.H.O.; W. C. Richardson, sanitary inspector.	....	None ....
Wainfleet A.—51,311. H.— P.—2,604.	W. B. Hopkins, M.H.O.	No regular plan or method adopted.	Scarlatina, 60 cases; typhoid, 7 cases, 1 death.
Wallace A.— H.— P.—2,870.	Dr. Standish, M.H.O...	Only when requested. ..	Diphtheria, 2 cases; typhoid, 1 case.
Wallaston A.— H.— P.—700.	Wm. Dafoe, M.D., M. H. O.; Alex. Watt, sanitary inspector.	None	None ....
Walsingham, S A.— H.— P.—1,902.	J. M. Phelan, M.D., M. H.O.; H. Terry, sanitary inspector.	None	None ....
Walsingham, N A.— H.— P.—3,293.	No M.H.O.; Wm. Alexander, sanitary inspector.	None	None ....
Watt A.— H.— P.—892.	....	Each member of board acts as inspector for his locality.	None ....
Waterloo A.— H.— P.—6,947.	H. G. Roberts, M.D.; Owen Reist, sanitary inspector.	Inspection by either M. H. O. or sanitary inspector.	Diphtheria, 40 cases; typhoid, 20 cases.

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
Not required	No	Methods recommended by Provincial Board of Health.	Twenty-one; 25; about 950 children in municipality.	
Isolation, of patients in private houses.	No; 622; 350 vaccinated.	Scrubbing and washing, using disinfectants and fumigation with sulphur fumes, under direction of M. H. O. or attending physician.	Twelve; 14; average, 35 to 40.	150 cubic feet
Isolation, with the use of carbolic acid, copperas and chloride of lime.	No; 788	No report	Twelve	
No hospital	No; 700; none		Nine; 2 only have 2 rooms.	
None	No; about 460 pupils; none vaccinated in 1894.	None	Twelve schools, all 1 room; attendance run from 30 to 60 and 80.	
No hospital; families isolated as much as possible.	No; don't know	No occasion	Ten; 1 room; don't know.	As required by Education Department
None; no	None	None	Five schools; 1 room in each.	
No	No	None	Eleven	
None	No; none	None	Twelve	
None	No; parents and guardians have been notified; number of children from 5 to 21, 347.	None	Seven; 7	
No hospital; isolated for diphtheria.	Yes; 1,300; all vaccinated.	By use of chloride of lime, carbolic acid, and fumigation by sulphur fumes.	Twenty-seven	

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub soil.
Trafalgar A.— H.— P.—3,715.	None	None	Clay; sub-soil, sand
Usborne A.— H.— P.—2,424.	To M. H. O. and other physicians.	One butter factory, 2 hands.	Wells used; clay soil; gravelly sub-soil.
Uxbridge A.— H.— P.—3,100.	Yes		Clay loam; sandy sub-soil.
Vespra A.— H.— P.—2,700.	No forms	None	Wells; varies from sand to heavy clay.
Wainfleet A.—51,311. H.— P.—2,634.	None supplied; none used.	None	Creeks and wells
Wallace A.— H.— P.—2,870.	Yes	Two cheese factories, 2 hands in each.	Wells and running streams; clay loam, gravel generally.
Wallaston A.— H.— P.—700.	No	Two cheese factories	
Walsingham, S A.— H.— P.—1,902.	No	Three cheese factories, 5 hands.	Wells; clay, sand or loam
Walsingham, N A.— H.— P.—3,293.	No	Three cheese factories	Wells only; sandy loam.
Watt A.— H.— P.—892.	Have had no use for them.	None	Soil variable from heavy clay to sand.
Waterloo A.— H.— P.—6,947.	Yes		Clay loam with gravel sub-soil.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is their medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughter houses: Give number licensed. How drained, and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal.	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
Nothing has been done in this section.	Four; none; cannot say.	....	....	....
No inspection; no examination.	Four; ordinary drainage; offal fed.	By householder	....	....
....	None	....	....	....
None	None	Householder	Farmers use their sewage for manure.	....
None; no; none	No license required.	Householder........	No	No.
None; none	No; none	As farmers usually do; no contract.	....	....
Cannot say	....	....	Householder	None.
Cannot give number of cows; no inspection.	None	Householder........	....	....
Can't say; no inspection.	None	Householder........	....	....
400 cows; no; none.	None	Householder........	....	None.
300; veterinary inspection; one examination; no tuberculosis found to exist.	Eleven; natural drainage; offal buried or fed to hogs.	....	....	....

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Wanwanosh East .... A.— H.— P.—1,839.	John McAsh, M.H.O ...	....	....
Wanwanosh West .... A.— H.— P.—2,166.	T. E. Case, M. H. O.; Alex. Stewart, sanitary inspector.	There is no system in regard to general inspection; no action taken unless complaints are made, or from observation by different members of the board.	Scarlatina, 4 cases; typhoid, 1 case.
Wellesley .... A.— H.— P.—5,054.	Wm. Morton, M.H.O...	All schools inspected and am compelled to express dissatisfaction with the indifference regarding the condition of the wells.	There has not been anything like a prevalence of any of the diseases that come within the jurisdiction of the board; diphtheria, scarlet fever and typhoid manifested their presence but without serious results.
Westminster .... A.— H.— P.—4,466.	G. A. Routledge, M.D., M.H.O.; Thos. Tomlinson, sanitary inspector.	Cheese factories and slaughter houses inspected once a year.	Diphtheria, 15 cases and 2 deaths.
Whitby East .... A.— H.— P.—2,872.	F. Rae, M. H. O.; J. Mouse, sanitary inspector.	All cases reported are inspected.	Scarlatina, 1; diphtheria, 4, 1 death; typhoid, 5.
Whitchurch .... A.—60,000. H.—750. P.—3,729.	Dr. Freel, M.H.O.; Dr. Coulter, M.H.O.; G. H. Powell, sanitary inspector.	Nothing done unless complaints are made.	Scarlatina, 3 cases ......
Widdifield .... A.— H.— P.—321.	J. B. Carruthers, M. H. O.; J. J. Jessop, sanitary inspector.	....	Not any...... ....
Williams East .... A.— H.— P.—1,612.	John Gunn, M.D., M. H.O.	....	Typhoid, 1 case, 1 death.
Williams West .... A.— H.— P.—	Wm. Caro, M.D., M.H.O.	....	....

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	No	....	....	....
The house is placarded, disinfectants used; no isolation hospital.	No; 736 school children; 200 have been vaccinated in 1894.	Typhoid fever, a hole 4 feet deep for excretions; the chamber contains half a pint of water (bichlor, 1 to 1,000); bed clothes are soaked for 3 hours in similar mixture before being washed; diphtheria room well ventilated and a spray consisting of sulphur is burned, etc.	Eleven; 1 room in each, except 3 schools which have 2 rooms; they average 25 pupils.	300 feet ....
....	....	....	....	....
No special means ...	Notice was sent to all schools; believe most children are vaccinated.	The board has not been called upon to do anything of the kind.	Twenty-three; 1 room in each; average attendance about 25.	....
Isolated in houses; have no hospital	No; none vaccinated that is known.	....	Eleven; 12	....
No action thought to be necessary.	No; 1,237 school children; don't know.	Physicians generally instruct what to do.	Fifteen	....
None	Yes; but have not got the number.	None	One; 1: do not know attendance.	....
....	No; 284 children in township.	....	Seven; 1 room in each.	....
None	No; 570 in township; very few if any.	....	Thirteen; 1 room in each.	....

TOWNSHIPS.—*Continued.*

Municipality.	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply, where wells are used, give character of soil and sub-soil.
Wanwanosh East A.— H.— P.—1,839.	....	....	....
Wawanosh West A.— H.— P.—2,166.	No; no children are allowed to go while contagious is in home.	None	Wells and spring creeks; clay loam is the largest percentage of soil; about 10 per cent. of the soil black loam.
Wellesley A.— H.— P.—5,054.	....	....	....
Westminster A.— H.— P.—4,466.	We have the forms but are not much used.	Six cheese factories, 2 employees in each.	All wells; surface soil varies; water generally found in quicksand.
Whitby East. A.— H.— P.—2,872.	No forms	One cheese factory, 2 hands; 1 shingle factory, 80 hands; 3 elevators, 20 hands.	Clay loam; clay sub-soil.
Whitchurch A.—60,000. H.—750. P.—3,729.	....	None	Wells are generally used; soil and sub-soil varies.
Widdifield A.— H.— P.—321.	None	None	Spring creeks; sandy and rocky.
Williams East A.— H.— P.—1,612.	No necessity for them	None	Wells, with some springs; soil, mostly clay.
Williams West A.— H.— P.—	Don't use them	None	Ordinary wells; some springs.

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds for tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so, is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated?
....	None	Householder........	....	None.
Do not know; no inspection.	Two; offal is carted and buried, that is the parts that cannot be utilized.	Householder........	There is great negligence throughout the township in regard to privies, not more than 5 per cent. use dry earth system, the remainder allow pits to almost fill before getting cleaned; they simply dig a hole near pit and empty contents.	None except slaughterhouses.
Tuberculosis in cattle seems to be on the increase.	Slaughterhouses, piggeries and cider mills are properly kept.	....	....	....
About 3,000; never discovered any tuberculosis; no inspection.	Four slaughterhouses inspected once a year; offal fed to pigs.	By householder	Generally into privy pits; usually clean once a year.	None.
None	....	....	....	....
....	A few in isolated places; are required to remove offal.	... .	....	None.
From 60 to 80; no inspection.	Two; no license; offal fed to hogs..	Householder........	Householder...... .	....
....	....	....	....	....
Don't know; no medical or veterinary inspection.	Three; none licensed	....	....	None.

TOWNSHIPS.—*Continued.*

Municipality.	Names of M. H. O. and sanitary inspector.	State extent and methods of general inspection.	Contagious diseases.
Williamsburg .... A.— H.— P.—3,889.	....	....	None reported..........
Windham .... A.— H.— P.—3,749.	J. C. Bell, M.D., M. H. O.	....	Scarlatina, 12 cases, 3 deaths; typhoid, 6 cases.
Wilmot .... A.—64,000. H.— P.—5,155.	W. R. Nicholls, M.D.; Jacob Wahl, sanitary inspector.	Personal inspection by inspector at stated periods and when required.	Scarlatina, 12 cases; diphtheria, 10 cases, 2 deaths: typhoid, 6 cases.
Woolwich .... A.— H.— P.—4,367.	Wm. O. Robinson, M. H. O.	....	Scarlatina, 6 cases; diphtheria, 6 cases; typhoid, 20 cases.
York............. .... A.— H.— P.—7,309.	T.J.Page, M.D.,M.H.O.	Inspector examines schools and premises.	Township has been very free from epidemic; 10 cases of diphtheria reported and a few cases of scarlet fever.
Zone .... A.— H.— P.—	A. D. Graham, M. H. O.	By sanitary inspector once a year.	None ....
Yonge and Escott .... A.— H.— P.—	....	The sanitary condition of the municipality is in a fairly good shape.	....

TOWNSHIPS.—*Continued.*

Isolation of contagious diseases. State methods and whether any isolation hospital.	Has vaccination been compulsory? State school children in municipality and how many vaccinated in 1894.	Disinfection of contagious diseases. Give details of how carried out.	Number of schools. Number of rooms and attendance in each.	Average cubic air space to each pupil.
....	....	....	....	....
....	....	....	Fifteen............	....
Isolation in separate room, followed by disinfection.	No; don't know....	Washing clothes, walls, floors and everything; bichloride solution; burning sulphur when room is moist; steaming clothing; both of patient.	Twenty-one; cannot ascertain this.	No means of ascertaining.
Contagious diseases are kept well isolated; no hospital.	Most of the school children are vaccinated.	By keeping the premises clean; patients isolated.	Ten schools; generally 3 rooms.	....
....	....	....	....	....
None	No; none	....	Five; 1 room each..	....
....	....	....	....	....

TOWNSHIPS.—*Continued.*

Municipality,	Forms for notification by teachers and M. H. O. of contagious diseases. Are both supplied? Do both make use of them?	Number of factories and institutions. State their character, and the number of employees in each.	Water supply. Where wells are used, give character of soil and sub-soil.
Williamsburg A.— H.— P.—3,889.			
Windham A.— H.— P.—3,749.			Wells; mostly gravel loam.
Wilmot A.—64,000. H.— P.—5,155.	No	Ten; linseed mill, foundry, saw mill, cigar box factory, woollen mill, mill, flax mill, 3 cheese factories, 1 butter factory, employing respectively 40, 12, 3, 4, 12, 5, 6, 12, 3, 2 hands.	Soil, clay; sub-soil, clay or sand.
Woolwich A.— H.— P.—4,367.	Forms supplied	One glue factory; 1 woollen factory; 1 grist mill; 1 stove drum factory, 10 to 30 in each institution.	Sub-soil generally sand and gravel.
York A.— H.— P.—7,309.			
Zone	No forms		
Yonge and Escott			

TOWNSHIPS.—*Continued.*

Number of dairy cows. Is there medical or veterinary inspection? Give details of any examination of herds of tuberculosis.	Slaughterhouses. Give number licensed, how drained and how offal is disposed of.	Disposal of garbage and night soil. Whether by contract or only by householder.	Sewage. How disposed of. Whether by dry earth closets. If so is there contract removal?	State number and kind of noxious trades. (See sec. 63 Public Health Act.) How licensed and regulated.
....	The slaughterhouses are inspected and when found not in a sanitary condition, the owners are given notice to do so at once.	....	....	....
....	....	....	....	....
Cannot say; no; 2 beeves were condemned and buried but came from Mornington tp.	Five; no licenses required; under inspection.	Privy pits, dry earth closets and one crematory in a factory; by householder.	No sewage in township; tile drainage.	None.
....	One licensed......	Well looked after...	By householder	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....

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